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BRIEFLY TOLD.

A BATCH OF PERSONALS.—Mr. William Lindhurst has been appointed local manager of the Fullerton (Cal.) Gas Company, vice Mr. A. C. Thompson, resigned.

Mr. Horace M. Harriman has been appointed Superintendent of the Hartford City (Conn.) Gas Light Company, vice Mr. G. K. Dustin. The latter has attached himself to the field staff of the Susquehanna Railway, Light and Power Company.

Mr. T. R. Wallop has accepted the place of manager-in-charge at Anaheim, Cal., succeeding Mr. Ross.

Mr. Denins M. Coughlan, formerly the business manager of the Canton (O.) Gas and Electric Light Company, has been appointed to a responsible position in the new business division of the Consolidated Gas Company, of New York.

Mr. Henry C. Paul has resigned the Presidency of the Fort Wayne (Ind.) Gas Company. His connection with that enterprise dates back 20 years. Mr. Paul was one of those who organized the first company to pipe natural gas into Fort Wayne the latter part of 1887.

Mr. E. C. Peebles, so we understand, has resigned the superintendency of the North Adams (Mass.) Gas Company.

ALUMNI ASSOCIATION, WORCESTER POLYTECHNIC INSTITUTE, RESPECTING THE DEATH OF DR. HOMER T. FULLER.—At the request of one of our subscribers, who holds a prominent place in the profession of gas engineering, we give prominence to the action of the Executive Committee of the Alumni Association respecting the death of Dr. Homer T. Fuller: At a special meeting of the Executive Committee of the Alumni Association of the Worcester Polytechnic Institute, held on August 18, 1908, the following resolutions were adopted:

"*Whereas*, We have learned with sorrow of the death of Dr. Homer T. Fuller, President of the Faculty of the Worcester Polytechnic Institute from 1882 to 1894; and, whereas, we deem it fitting as elected representatives of the Alumni, to take action thereon: We wish to express our sad regret at the death of the man who stood at the head of the Institute during the school life of so many of our number. He held this high position during that time in our lives when we were most open to inspiring, helpful influences, when we were most deeply affected by the characters of those to whom was intrusted the large responsibility of guiding our training as men as well as engineers. Those of us who came under Dr. Fuller's instruction will always remember that all his duties were done with great conscientiousness. He was untiring in the work for the welfare of the Institute, so that we feel glad that during his presidency there was so striking a growth in the thoroughness or the instruction given, in the equipment at his command and in the numbers and standing of the graduates. He set us an example of patient painstaking service to the cause he had at heart that was invaluable to us who were training under his direction for the exacting duties of the modern engineering world. His zeal for his work, his unflagging application to the trying tasks of directing a growing institution, will always be remembered among those of us who came under him. Most of all we were impressed by his clean, upright, unswerving Christian character. He was the kind of man who had but to see his duty clearly before him to apply himself with all his energies to an unflinching performance of the work.

"*Therefore, be it Resolved*, That these minutes be sent to the family of Dr. Fuller, be spread upon our records and that the same be presented and read at the next annual meeting of the Alumni Association."

CURRENT MENTION.—

"W. G.," in a letter dated November 3d, from Lincon, Neb., says: "In less than a week the new storage holder for the Lincoln, Neb., Gas and Electric Light Company will be in operation. This means that the hand-to-mouth method of working will be at an end. Last winter, at times, the reserve supply was less than the quantity equal to keep gas on the city for 3 hours. The new holder, however, will guarantee a supply equal to the demand for 24 hours. The Company is arranging an exhibit for the proposed appliance exposition, to b

LIBRARY OF CONGRESS NOV 9 1908 SMITHSONIAN DEPOSIT.

held in Chicago the second week in December, under the auspices of the National Commercial Gas Association, countenanced and assisted by the American Gas Institute. Manager Honeywell and Mr. Frank Frueauff have, with the assistance of the Company's attorneys, arranged a plan of action respecting the contest with the authorities over the demand of the latter for $1 gas, which they hold will upset the city's contentions. This case will be tried out before the Hon. W. H. Munger, Federal Judge of the district. The business outlook here is excellent, and the Gas and Electric Company is certainly getting its share of the trading. In fact, I am sure that I speak the bare truth when I assert that no other industry in this go-ahead city suffered less from the recent financial disturbance than the named corporation."

MR. W. G. MELOON, formerly General Manager of the Atlantic Shore Line Railway, has been appointed General Manager of the Twin State Gas and Electric Company, with headquarters at Dover, N. H. Mr. George G. Welch will take up the duties of Assistant Manager.

SINCE the profit-sharing plan of the New Haven Company was put practically in operation (April, 1907), shares to the number of 336 have come into the possession of its employees.

WE are indebted to Mr. R. S. Grierson for the following synopsis of the stated action. The caption is:

"City of Bowling Green, Ky., *vs.* Bowling Green Gas Light Company. Filed, October 16, 1908. Appeal from Warren County Circuit Court.

"*First.*—Cities. Action by City against Gas Company.—Injury to Person.—Pleading.—The city of Bowling Green compromised a suit against it for injuries resulting from escaping steam from the Gas Company while a street was being repaired, and in pursuance of an agreement that the Gas Company should recoup it in the amount paid, instituted this suit against the Company. There is no averment in the petition that the Company was notified of the necessity of stopping the flow of steam while the street was being repaired, and as the Company had been using the sewer, the city cannot maintain an action against it for loss sustained, as it failed to notify the Company of the necessity of stopping the flow of steam."

"*Second.*—Same.—Joint Tort Feasors.—Exception to rule. This class of cases is an exception to the general rule that there is no right of contribution among joint tort feasors, and there might have been a cause of action by the city in this case had the Company been notified to stop its flow of steam."

MR. ARTHUR WILLIAMS has resigned from service of any sort whatever in connection with the various properties controlled in St. Louis by the North American Company. It is further understood that Capt. McCulloch will also withdraw from the Company's service, April 1, 1909.

"R. B.," writing from Baltimore, Md., under date of the 29th ult., says: "In response to an invitation, quite a number of the force of the Baltimore (Md.) Consolidated Gas and Electric Company assembled in its main offices the evening of the 27th October. The meeting was called for the purpose of organizing an athletic association much larger than the one heretofore maintained, and after a prolonged debate, it was determined to proceed on a larger scale than heretofore. The definite arrangements were not completed to the point where they could be summarized in this letter; but a future one will give you the details. The visit of our baseball team to Philadelphia on the third of last month, on the occasion of the game with the team of the United Gas Improvement Company, impressed us so that we thought some attempt on our part to pattern after it would not be amiss. The U. G. I. Athletic Association, of Philadelphia, has a beautifully arranged field, and a modern club house of the bungalow type, with bowling alleys, locker rooms, showers and baths, a reception room, dancing floor, assembly hall, etc., all fitted up to meet every need. Their athletic field is a beauty, having baseball diamond, track facilities, tennis courts, etc., and the whole may be accepted as a suitable assembling place for any set of athletes, either of the 'Varsity or working variety."

MESSRS. OLMSTED & STAMM, Solicitors, have given notice that on the 19th inst. they will ask the Governor of Pennsylvania to issue letters chartering the Gas Company of Moreland, the character and object of which will be the manufacture and supply of gas, for light only, to the public of the borough of Hatboro, and the township of Moreland, Montgomery county, Pa.

THE Galion (O.) Gas Company is to be reorganized.

Better Gas Illumination.

[Prepared for the Third Annual Meeting, American Gas Institute, October, 1908, by Mr. T. S. LITLE, JR., Gloucester City, N. J.]

In view of the recent radical improvements in the electric lighting field, it is about time that the gas man turned his attention to the general improvements in gas illumination. I say general, because I am perfectly aware that, in some cities, the developments along this line have been very marked; but, broadly speaking, the present practice in gas illumination is very wasteful.

The advent of the "illuminating engineer," in conjunction with the recent electrical developments, seems to have been more helpful to the electrical than the gas industry. There are various reasons for this. In the first place, light energy, when produced electrically, is far more costly than when produced by means of gas. In electrical circles, therefore, it was realized that, to make any headway at all, it was necessary to observe the strictest economy, which meant the proper placing of the lighting units and equipping them with the most efficient forms of reflectors. With gas lighting, however, this economy has never been necessary, on account of the great gulf which has always existed between the cost of gas lighting and electric lighting. To-day, however, the gas man finds himself confronted with an improvement of nearly 300 per cent. in electric lighting efficiency. The gas engineers who have heretofore confined their attention to works' development and improved methods of manufacture will, therefore, be compelled to meet this serious problem immediately. The commercial department of every gas company in the country has found it comparatively easy to obtain new business on account of the high cost handicap of electric lighting, and all that was necessary in order to sell gas arc lamps, for instance, was to obtain a good, persuasive solicitor, who often found it comparatively easy to keep a force of several fitters continually busy installing lamps. His was virgin territory, for in many cases he found people using either flat flame gas burners or bare 16-candle power electric lamps, and under such circumstances it was not necessary for the solicitor to be very much of an illuminating engineer to handle the situation. To substantiate this statement, I would like to draw attention to the candle power curve shown in Fig. 1, which shows the candle power in the lower hemisphere of a well known type of incandescent gas burner, and which has been very extensively sold in the American market during the last few years. While conceding that this is better than the flat flame burner, it seems to me atrocious to use it for store window lighting, and yet I venture to say that there are many thousands so used. For example, such combination gives less than 1 foot candle immediately below on the floor of the window, where the burner is suspended 4 feet above. The only light obtained directly below is reflected from the surrounding draperies at the top and sides of the window and the inside surface of the glass front.

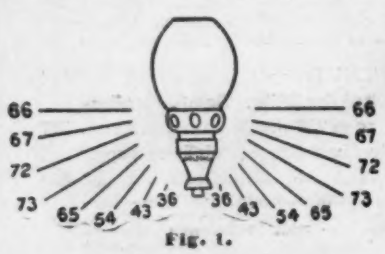


Fig. 1.

Of course, the customer realizes that one of these burners will not meet his requirements, even for a tiny window, and he, therefore, is compelled to use at least 2 burners, with a gas consumption of not less than 10 cubic feet per hour. You can, therefore, see how easy it is for the electric solicitor to place one 40-watt tungsten lamp, equipped with its characteristic holophane reflector in this same small shop window, with greatly improved illumination at considerably less cost, and that is how electric competition is going to be felt, for the electric man is well aware of the vulnerable points in gas illumination. The only alternative, therefore, is to anticipate this situation by the general introduction of more efficient devices.

The proper way to light a shop window is to use an inverted burner with concentrating shade, candle power curve of which I am showing in Fig. 2. The gas consumption in this case is from 3 to 3½ cubic feet per hour, and the illumination directly below is about 20 times that of the single burner before mentioned, but it must be remembered that the inverted burner so hung would be too close to the floor of the window; and it would be far better to hang it at least 6 feet from the floor, and even at this distance the light directly below would be at least 9 times that of the upright burner mentioned, while the distribution would be good. It might also be mentioned that the inverted gas burner so equipped will give a light flux several times

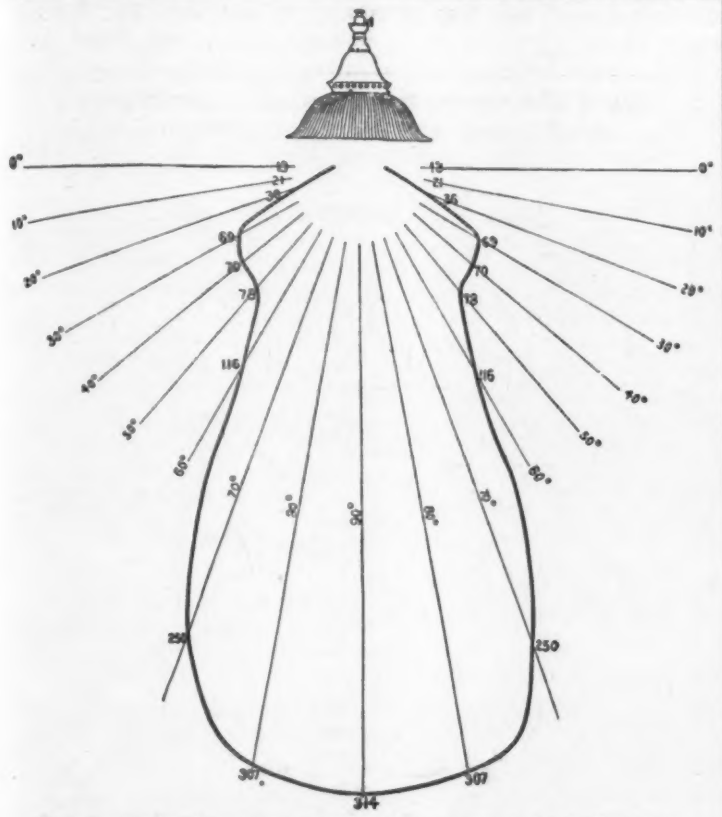


Fig. 2.—Candle Power Curve of Inverted Burner with Concentrating Shade.

greater than the 40-watt tungsten, where similar reflectors are used. In this connection it might be well to state that the consumer has seen the advantage of the inverted burner over the upright form, and in many cases has placed them in his show windows; but the equipment, as a rule, consists of simply a clear or partly frosted globe, which gives only about one-third of the useful light it would give if used with the proper kind of reflector.

In lighting large store windows it is necessary to proceed in a different manner. The ceilings of such windows are usually of sufficient height to allow the lamp to be hung high. If it is a boxed-in window, and contains perishable goods, the lamps may be suspended above a decking, the light coming through glass panels. Concentrating reflectors are always used where the illumination is required only on the floor of the window, but where the illumination is wanted at the back of the window, as well as on the floor, angle shades as shown in Fig. 3 are used. It will be readily seen from the curve that the back

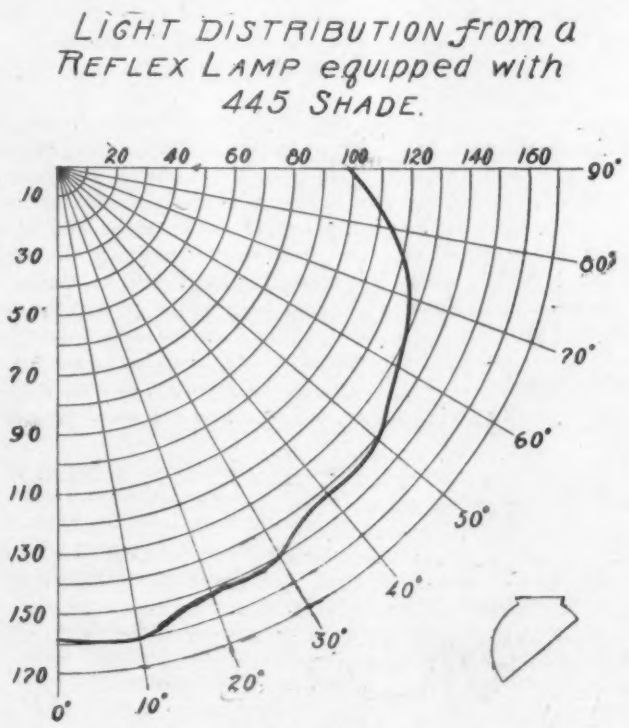


Fig. 3.

of the window is lighted as well as the floor. Fig. 4 shows the application of the angle shade in a high-class store window.

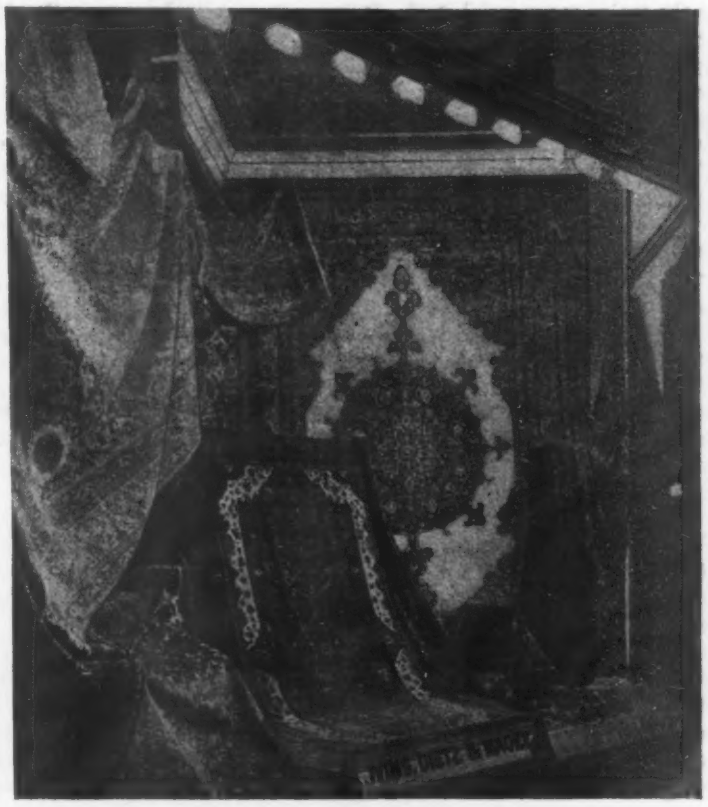


Fig. 4.—Application of Angle Shade in Store Window.

As the lighting of gas burners in store windows is sometimes rather difficult, and in some places it is impossible to use matches and tapers, the pilot system, or the electric jump spark system, as shown in Fig. 5,

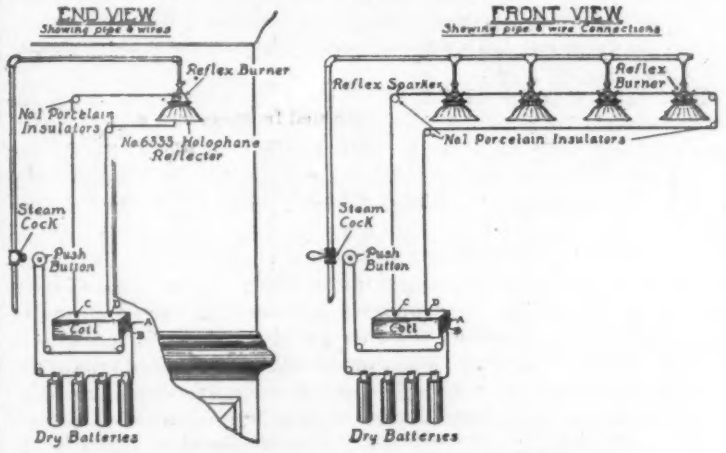


Fig. 5.—Electric Jump Spark System for Lighting Gas Burners.

is recommended. Many of these installations are in successful use, and, in conjunction with the automatic clock, the pilot system may be arranged to light and extinguish the lamps at any predetermined time.

It is within the province of the illuminating engineer to decide these matters, and there should be such an engineer in the employ of every gas company, who should handle all such matters, where it is not only difficult but sometimes impossible for the solicitor to do so. I know of one electric company where a system as outlined above is pursued, and consequently their installations are all creditable. For instance, there was one case where they were called upon to light a certain store interior. The solicitor reported the case to the engineer with his recommendations. The engineer, however, thought it best to make a personal examination. He found that the interior decoration was generally dark and gloomy, and by a little personal talk with the proprietor he convinced him that it would be to his advantage to renovate his place, using a light color scheme throughout; that by so doing his lighting expense could be cut down about 40 per cent., not to speak of the more satisfactory results by daylight as well. The

illuminating engineer should not be called upon simply in an advisory way, but he should come in direct contact with the consumer in the above manner, and he also should be in a position to give instructions to the entire commercial staff. It is a comparatively easy matter to train the lay mind to distinguish the difference between good and bad applications in illumination. Place yourself in the position of the purchaser. You want an engine, for instance, and you want to talk to a salesman who knows all about engines, and for that reason all of our engine concerns now have mechanical engineers on the road. They are not necessarily slick articles from a salesman standpoint, but they are on to their job. The days of buncombe salesmanship are over; in order to sell illumination the salesman must know a great deal about good illumination, for the public are badly in need of it, and nothing pleases a good salesman more than to know that a man is in need of the product he has to offer.

Another mistake frequently made is to hang gas arc lamps on the existing outlets without any regard to their proper spacing. It must be remembered that these outlets in many cases were placed many years ago, when the flat flame burner was in vogue, and it can, of course, be seen that, for the high power units of to-day, they are placed too close. The inverted light, while a decided improvement over the upright type, has already been much abused.

The characteristic curve of even the bare mantle gives more useful light. However, such combination should never be used for commercial lighting, but always with some form of reflector; any more than it would be sufficient to turn an incandescent electric light horizontally in order to get the benefit of its greatest natural candle power.

Prismatic reflectors are used universally in connection with the new metallic filament electric lamps. These reflectors are not only quite efficient, but present a very pleasing appearance. They must not be confused with the older types of prismatic globes, where the light was compelled to pass through the glass, as the filament or mantle was completely surrounded by the globe. These prismatic reflectors were never practicable for use in connection with gas burners of the inverted type, on account of the cracking of the glass neck by the heat; but this has now been entirely overcome by the substitution of a metallic neck. This allows the shade holding screws to be turned in tightly and securely on the metallic neck, which cannot be done in the case of the glass neck. This does not, therefore, place the inverted gas lamp at a disadvantage as was at first thought would be the case, due to the extremely high breakage encountered before the unbreakable neck was designed.

It was at first imagined that the commercial adaptation of the inverted mantle for large interiors would take the form of an inverted gas arc lamp, and consequently such lamps were built; but it was found that the combined light from a group of these mantles, surrounded by a spherical opalescent globe, was not any better than the combined illumination from an equal number of single burners equipped with similar globes. As has been shown, this kind of equipment is not conducive to the most useful light. As we cannot expect something for nothing, we cannot expect more light from a cluster of bare mantles than we could from an equal number of single lamps. To-day, as never before, we lean toward economy. The old type of upright gas arc was all very well when electric competition was far removed, but the gas man will now have to be satisfied with reduced consumption and more efficient units, otherwise he will have no consumption for illuminating purposes.

Fig. 6.

In view of these circumstances we designed our Reflexolier for lighting large areas, cut of which is shown in Fig. 6. The mechanical details of this device have been carefully worked out, and the fixture is now on the American market—possibly just at the psychological time to meet the expected severe competition from the tungsten electric lamps. To substantiate this statement, I am showing a candle power curve of a 3-light Reflexolier, equipped with Welsbach-Holophane distributing reflectors. See Fig. 7. The useful light in the room beneath is much greater than that produced by the 5-burner inverted arc lamp, equipped with light alabaster globe, with same man-

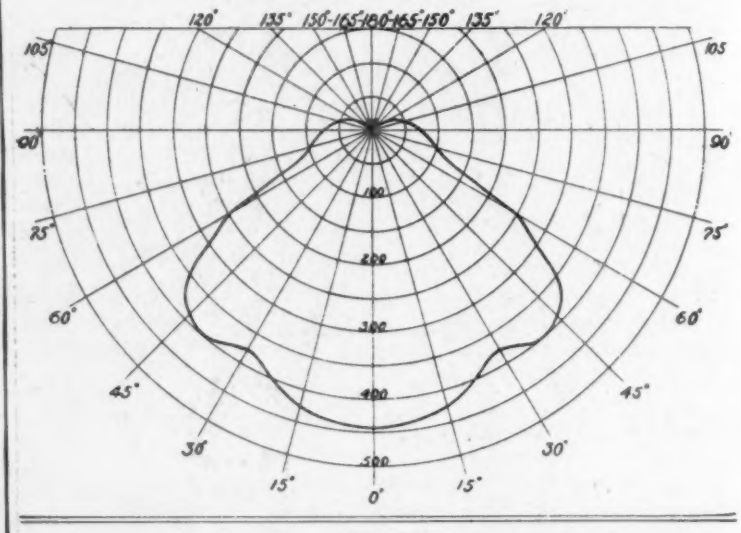


Fig. 7.

tles and under same gas pressure. It must be borne in mind, however, that the inverted gas arc lamp give more useful light than the upright arc. It can, therefore, be seen that the Reflexolier is a very radical development and represents the greatest useful efficiency possible in connection with modern gas lighting practice, and the cost of the unit light cluster in the useful zone with this combination is very much lower than that produced by the metallic filament lamps. While this embodies all the desirable features of the high efficiency inverted burner with reflector, it is so constructed that all the burners may be lighted or extinguished by the simple pulling of a chain, in exactly the same way as is accomplished in the gas arc lamp. This is a very necessary feature, as the consumer will seldom discriminate between high efficiency and convenience of operation.

A common mistake in the use of inverted burners is to place them on low hanging chandeliers. The inverted burner is at its best when hung high, as can be readily seen by its photometric curve. It is, of course, difficult to give any general data, but wherever possible the Reflexolier should be placed at least 9 feet from the floor, principally for two reasons: First, because of the character of the distribution curve at this height, the illumination is not only good directly beneath, but also on counters and shelves along the side walls; second, because lamps so hung are sufficiently above the range of vision so as not to be objectionable.

There are many applications requiring more than ordinary skill, where it is necessary to have some knowlege of illuminating engineering. A mistake is frequently made in the lighting of a bowling alley. In this case the inverted burner with angle shade, previously shown in Fig. 3, should be used, placed at such height and at such distance apart as to properly and uniformly illuminate the surface of the alley. While it may be argued that in cases like this a uniform illumination is not necessary, as long as the pins at the end of the alley are properly illuminated, yet as a matter of fact the appearance of bright spots and dark spaces is very annoying to the players. Two of the largest bowling alleys in the country, located in Baltimore, are lighted in this manner, one of which has 56 alleys and the other 48.

In this connection might be mentioned the illumination of public halls, school rooms, etc. Invariably the lamps, whether gas or electric, are hung so that the light strikes directly into the eyes of the audience, but if the angle shades just mentioned are used with their blank side toward the eye, the source of light is completely hidden and a most restful sensation is experienced.

You gentlemen, as engineers, recognize the necessity of efficient devices in power application. You know that the old slide valve engine of the sawmill type has long since been ostracized from central stations, and I think there are entirely too many "slide valve engines" still in use in the lighting business. I do not wish to be considered as a calamity howler, as my remarks apply with equal

force to the electric man; there are still some millions of red hot hair pins in nightly use.

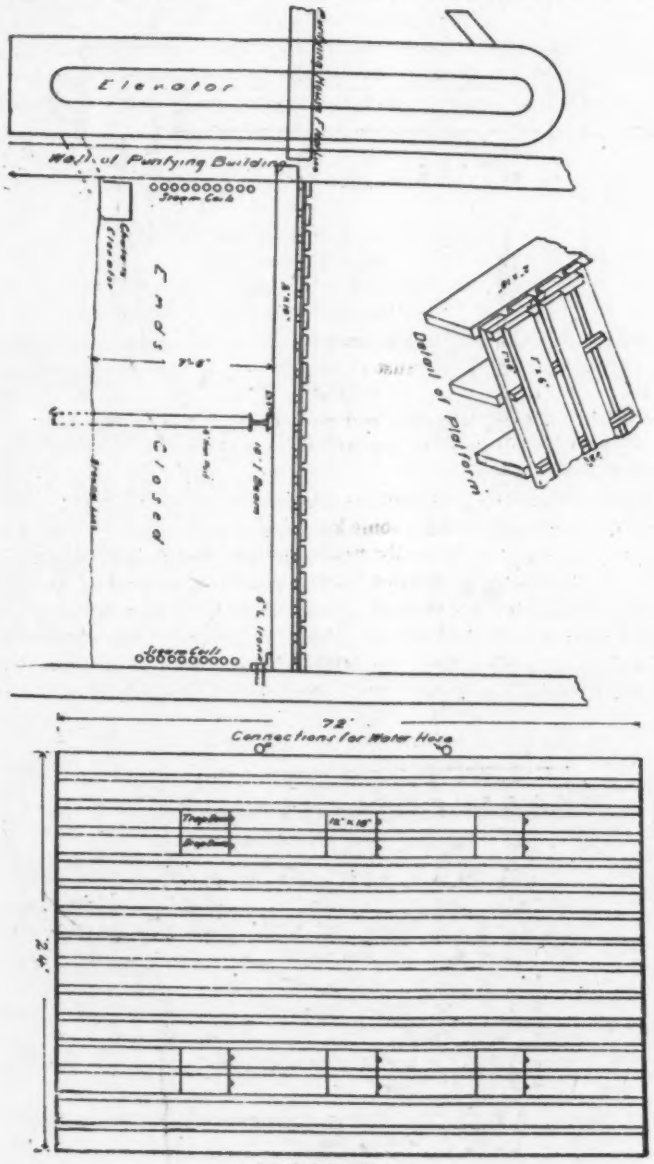
These subjects are simply touched upon to show the importance of dealing with these matters intelligently and properly, and incidentally and not of the least importance, good lighting installations reflect credit upon the lighting company and make satisfied customers, the desirability of which to-day is appreciated by all of our great public service corporations.

The greatest problem in gas illumination in America seems to be the method of reaching the consumer. Where the lighting companies are not active in themselves placing the lighting devices, the consumer is compelled to purchase from the small dealer who has no idea of high efficiencies or economy as viewed from the consumer's standpoint. The dealer regards gas lighting appliances simply as merchandise, favoring that particular brand that nets him the greatest profit, and the natural result is that he procures the cheapest types, which he sells at as high prices as he is able to get, barely keeping under the legitimate prices of the higher grade goods.

[Continued from Page 751.]

Wrinkle Budget for 1908, Submitted by Mr. Milan R. Bump, as Editor of the Wrinkle Department, The American Gas Institute.

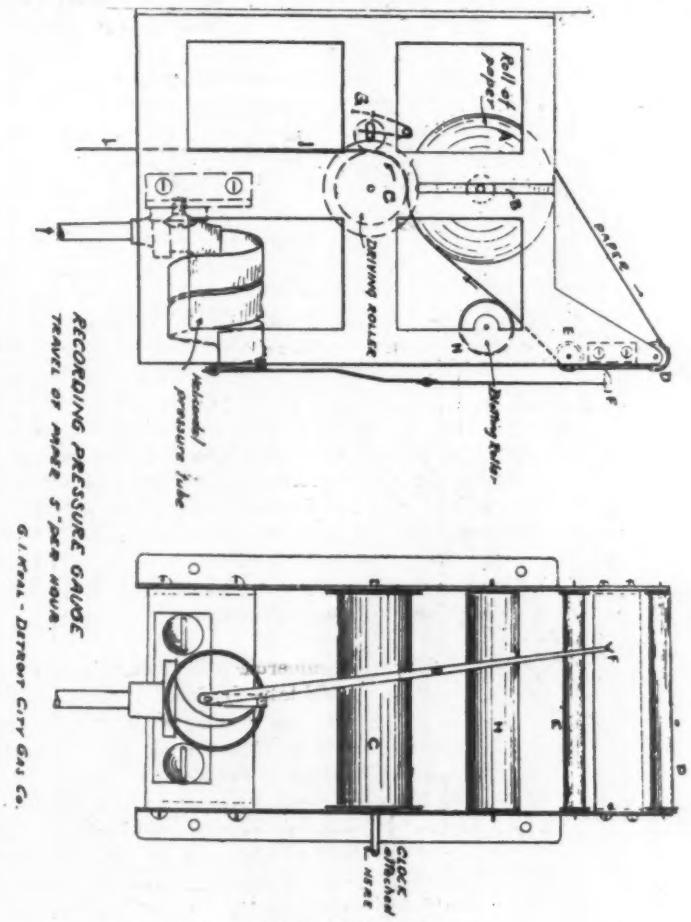
No. 14. *Revivification and Handling of Purifying Material.*—This sketch shows where the available space for revivifying purifying material has been increased 100 per cent., and at the same time, it presents a scheme by which revivification is rapidly brought about without handling or turning over the material. The grid construction of the platform, allowing the free passage of the oxygen up through the material, brings about a rapid revivification. The cooling effect of the air on the material next to the grids keeps the temperature low enough to prevent firing of the wooden construction.



Wrinkle No. 14.

The temperature of material is easily regulated by spraying water over surface of material. After revivification, the trap door in platform, which swings downward, provides an easy way to transfer material to the floor below which is directly accessible to the bucket elevator which is used to fill the boxes in the purifying house adjoining. During the winter months the ends of this lower compartment are closed up and by a system of steam coils running the length of the room, it is heated by exhaust steam to a temperature comparable to that of the summer months. In this way slow chemical action in material due to the low temperature of the outside temperature is entirely overcome.—V. F. DEWEY, Detroit, Mich.

No. 15. *Recording Pressure Gauge.*—The object of this gauge is to obtain a chart showing distinctly the variations of pressure during short periods of time. It works as follows: The roll of paper *A* is placed with axes in slot *B* and resting upon the driving roller *C*. The paper



Wrinkle No. 15.

is fed off the top of roll over guide rollers *D* and *E*, and under the pen *F*, thence under the roll of paper and between driving roller *C* and tension roller *G*. The fresh ink on chart is blotted by blotter roller *H*.—G. I. KEAL, Detroit, Mich.

No. 16. *Method of Removing Naphthaline Deposits from Coal Gas System.*—Whenever it is necessary, for any reason, to shut down a coal gas plant for several hours, or whenever excessive naphthaline deposits demand particular attention, a very effective and rapid way of cleaning the entire system is to open a large air vent on the foul main, close the inlet valve to the boxes, and open a vent as near this inlet valve as is convenient. Run the exhauster to its full capacity, which will force large volumes of air through the system. Inject large quantities of steam into the condensers, washers, scrubbers and connections, in conjunction with the circulation of the air. The steam-heated air will rapidly remove the deposits, and in 2 or 3 hours the system will be as clean as when new. All seals must be kept open during the process.—F. L. CROSS, Detroit, Mich.

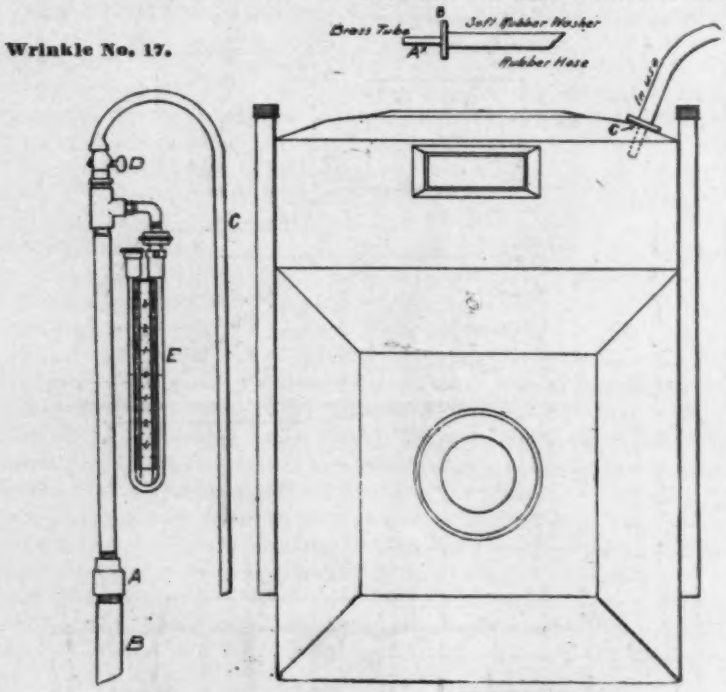
No. 17. *Gauge Apparatus for Testing Drips.*—The gauge shown in the attached sketch is fitted up for use in testing drips. In operation the coupling *A* is screwed on to the drip stalk *B*. The operator then blows on the rubber tubing *C* with the cock *D* open, until the pressure on the gauge *E* reaches a maximum and then closes cock *D* allowing the pressure to remain at *B* for several minutes. This will show: First, the depth of water in the drip; second, whether the drip

stalk is tight or leaking. A drip tester on a bicycle can test a large number of drips per day, determining those that need pumping and reporting for repairs those where the drip stalks are leaking.—F. L. Cross, Detroit, Mich.

No. 18. *Meter Dial Chamber Test.*—The attached sketch shows a method for testing the dial chamber of a meter under any pressure desired. A small hole is made in the top of the meter and the tube *A* is inserted until the rubber washer *B* presses firmly on the meter. Turn pressure on the hose and test with soap suds. The small opening *C* is afterward filled with a drop of solder.—F. L. Cross, Detroit, Mich.

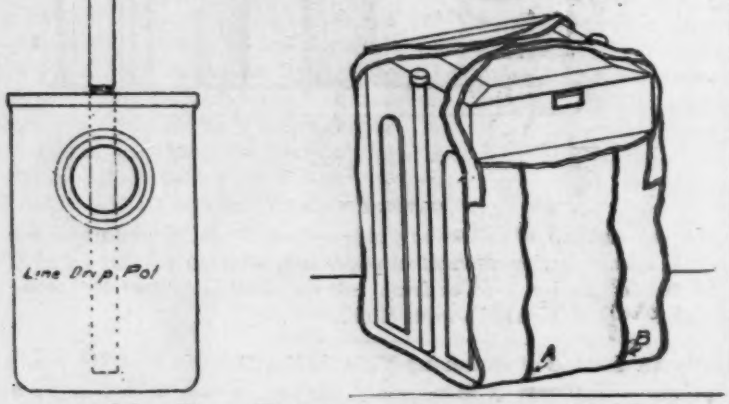
No. 19. *Canvas Meter Sling.*—The attacked sketch shows a canvas meter sling for use in handling meters between meter shop and consumer. This sling furnished a handle for carrying the meter and protects the front and back, also all corners and edges below the top, from rough handling. The rope re-enforcement at *A* and *B* takes a large amount of wear off the bottom and sides of the cover. The expense of such a sling is not great.—F. L. Cross, Detroit, Mich.

Wrinkle No. 17.

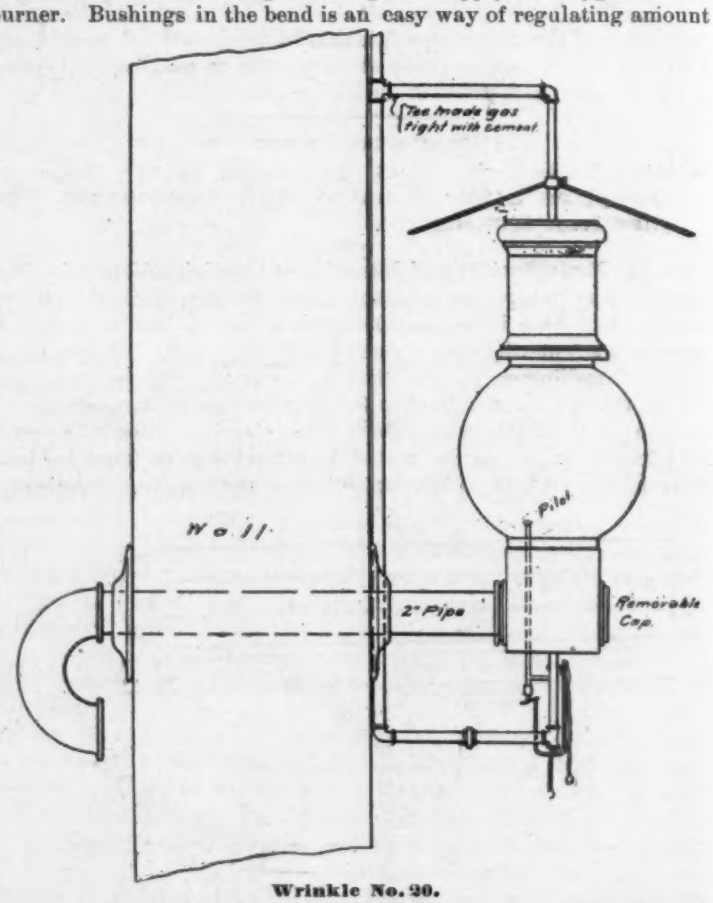


Wrinkle No. 18.

Wrinkle No. 19.

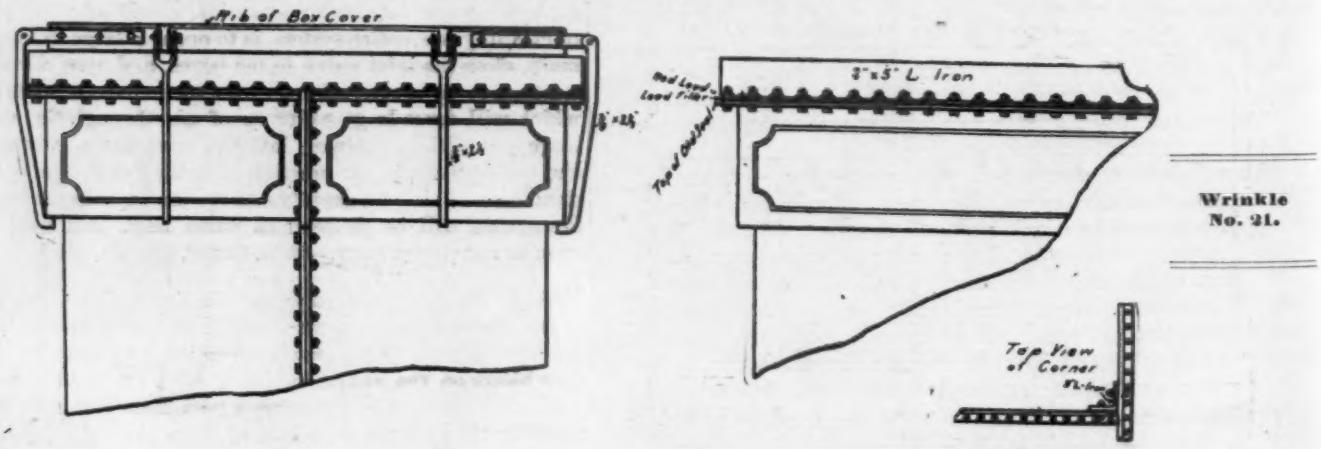


No. 20. *Dust Proof Gas Light.*—The accompanying sketch shows a specially designed 3-burner arc light which gets its supply of oxygen from the outside through a 2-inch pipe leading into the tee-shaped burner case. A special 2-inch flanged casting is soldered to burner case to receive the 2-inch pipe. The ¼-inch gas supply pipe is used as a support for the shade and upper parts of lamp, also providing a means of sliding the shade and frame upward for the purpose of cleaning and maintenance. A spring collar, fitting the pipe, carried by the maintenance man, holds shade and frame up while the arc is being taken care of. The removal cap opposite the air supply permits of easy burner adjustments. The return bend is used to prevent air currents from causing an irregular supply of oxygen to the burner. Bushings in the bend is an easy way of regulating amount of oxygen to conform to the kind and number of burners used. The efficiency of this arc light is pronounced, and the maintenance cost is no more than for the ordinary inside arc. The mantles and inside of globe are always as clean as the outside air supply.—V. F. Dewey, Detroit, Mich.



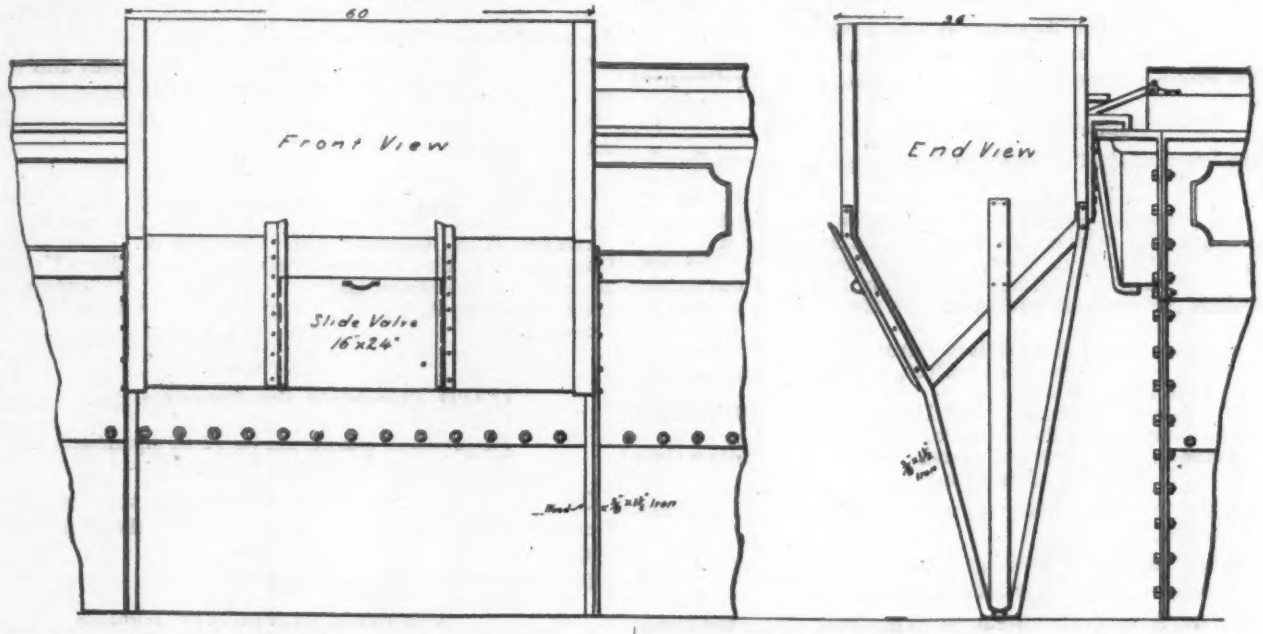
Wrinkle No. 20.

No. 21. *Increasing Water Lute Seals of Purifying Boxes.*—The accompanying wrinkle shows how the water seal of a set of purifying boxes was materially increased at a small cost. This scheme avoided either a new installation or a continued high purifying expense due to blowing the seals before the boxes showed foul at outlet.—V. F. Dewey, Detroit, Mich.



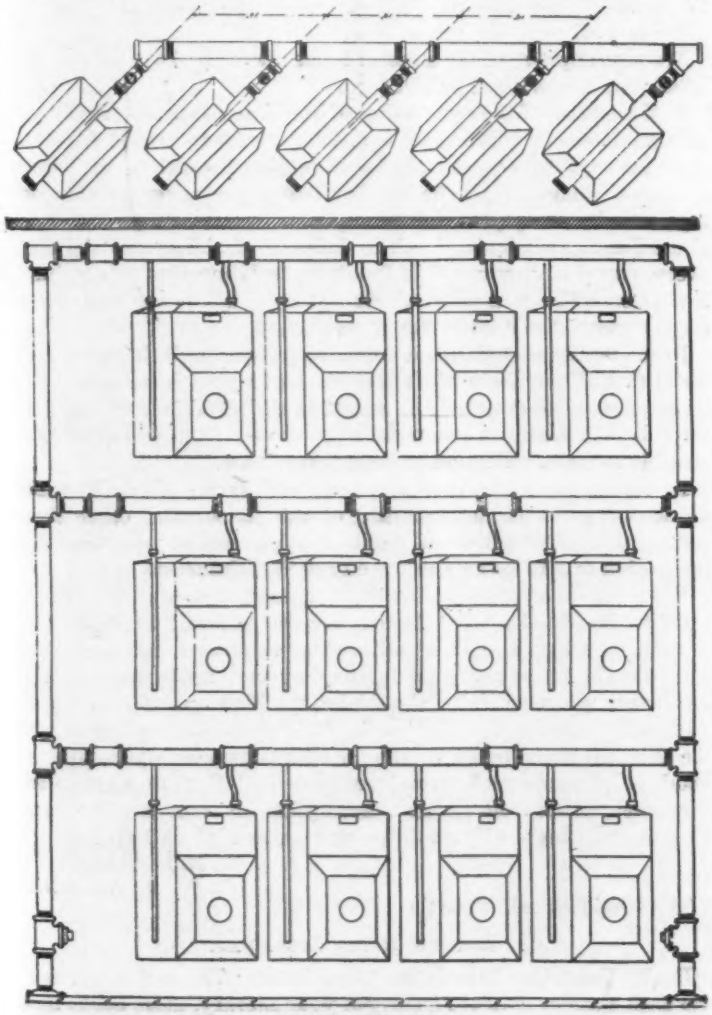
Wrinkle No. 21.

No. 22. Emptying Purifying Boxes with Wheelbarrows.—The accompanying sketch shows a wrinkle which can be used to great advantage in a plant where lack of space and location compel the use of wheelbarrows in emptying a purifying box. The capacity of the box and the rapid filling of the barrows by means of the slide valve in the V-shaped bottom permit a continuous operation which will reduce the labor expense over the old way 15 to 20 per cent. Where the water lute castings are strong enough, it is not necessary to put supports under the box, as the lugs should support it.—O. A. SINSEL, Detroit, Mich.



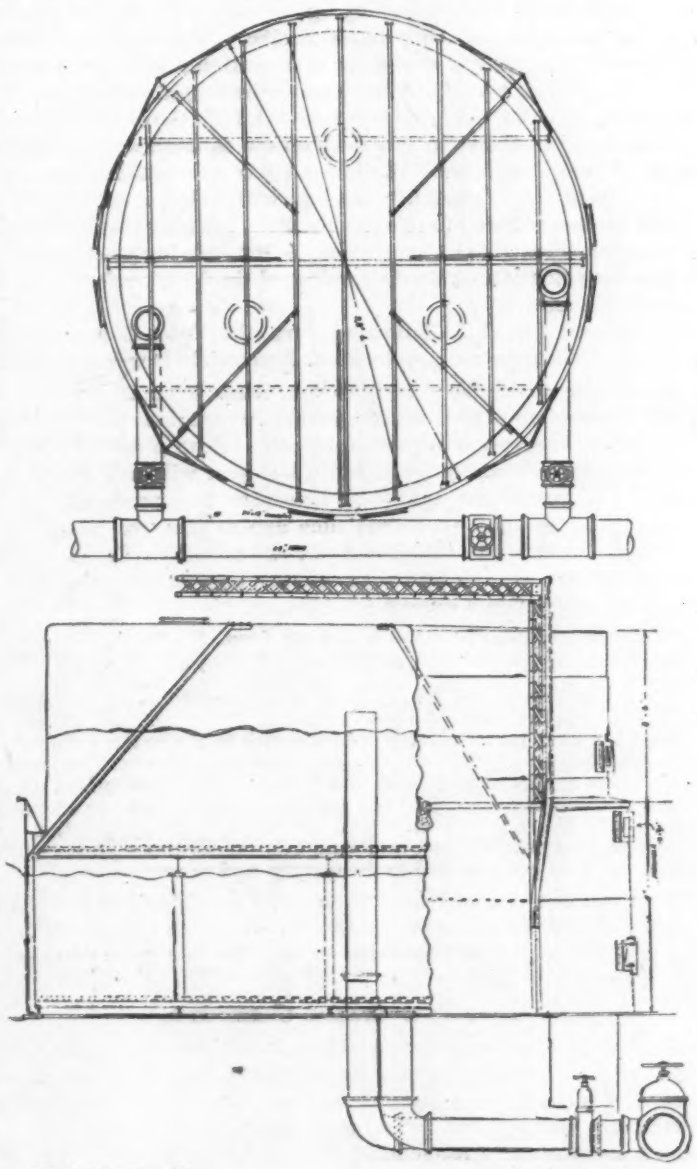
Wrinkle No. 22.

No. 23. Manifold for Rigid Meter Connections.—The sketches attached show a method of using rigid meter connections on manifolds. The meters are set at an angle of 45 degrees to the wall. The rigid meter connections are connected to Y's on the inlet header by means of male both ends brass cocks. The house piping runs down on the wall and connects into the outlet of each meter. The number of fittings in this construction is a minimum and all parts are interchangeable. The finished manifold is symmetrical in appearance and is very rigid.—F. L. CROSS, Detroit, Mich.



Wrinkle No. 23.

No. 24. Converting a Holder into a Purifying Box.—The accompanying sketch shows a method of converting an old holder into a purifying box.—V. F. DEWEY, Detroit, Mich.



Wrinkle No. 24.

(To be Continued.)

SIXTEENTH ANNUAL MEETING, PACIFIC COAST GAS ASSOCIATION.

HELD IN SANTA CRUZ, CAL., SEPTEMBER 15, 1908.

FIRST DAY—MORNING SESSION.

The meeting was called to order by the President at 2:25 P.M., Sept. 15. The President announced that, as time was scarce, the roll call and the reading of the minutes of last session would be dispensed with.

READING SOME COMMUNICATIONS.

The Secretary read the following letter from the American Gas Institute:

One of the principal objects of the American Gas Institute is to facilitate co-operation between the various State and District Gas Associations, and, with this in view, I inclose herewith for the consideration of the Pacific Coast Gas Association a copy of the Affiliation Agreement under which affiliation with the Institute may be accomplished.

Briefly, affiliation with the Institute means the concentration of association work, less duplication of effort, and the accomplishment of results with the least lost motion.

Two State Associations, namely, the Illinois and the Wisconsin, have already affiliated with the Institute.

I hope that the Pacific Coast Gas Association will soon follow their example.—A. C. HUMPHREYS, President.

On motion the communication was referred to the Board of Directors with power to act.

The Secretary read the following letter from the Yukon-Alaska Exposition Company, dated July 14th, 1908:

In behalf of the Alaska-Yukon-Pacific Exposition, I have the honor to invite the Pacific Coast Gas Association to hold its convention of 1909 at the city of Seattle.

The Exposition, which will open June 1st and close October 15, 1909, will display the wonderful progress of the West, the Northwest and the countries bordering on the Pacific. Besides the wonders of the Exposition, Seattle will offer many attractions. Its beautiful Puget Sound, its wonderful lakes and snowcapped mountains, will, we know, give the visitor a great treat while in the city. While the Exposition is in operation low rates on the railroad will be in effect from all points to Seattle. We do not know yet what these rates will be, but there is no doubt but what they will be low enough to induce a vast amount of travel to this city in 1909. Trusting that Seattle and the Exposition may have the pleasure of entertaining you in 1909.

The communication was duly acknowledged and referred to the Association meeting.

The Secretary read the following, from the Coast Counties Light and Power Company, signed by F. E. Fitzpatrick, General Manager:

Mr. Martin directs me to reply to your letter of the 20th ult., in regard to extending to the members of the Association and their families the privileges accorded them last year. I am pleased to inform you that the same courtesies extended last year will be accorded this year. I am very sorry that your letter was misplaced, otherwise it should have been answered some time ago so that you would have had it in time for your announcement. So far as our Companies are concerned, we will be pleased to extend any courtesy possible to make the convention a success.

The Secretary next read the following from the Santa Cruz-Portland Cement Company, inviting the members to visit its plant:

We are informed that the members of the Pacific Coast Gas Association will meet in their 16th convention at the City of Santa Cruz, on September 15th, 16th and 17th, and we wish to invite the members of the Association to visit our cement plant at Davenport. If your schedule of events has not been filled up, or can be changed to include a trip to the plant, and you will let us know the day the members would like to go, we will arrange for their transportation and entertainment while there, and will take them through the entire plant and over our railroad to the quarry and return.

The President—Tae next order of business according to the By-Laws is the report of the Directors, but as we were not able to have a meeting this afternoon, that report will be made the first thing to-morrow, and we will now have the

REPORTS OF SPECIAL COMMITTEES.

Mr. Lowe—The Committee on Gas Engineers' Degree is progressing, and I may also report similarly for the Committee on a Permanent Home, of both of which Committees I am Chairman. Owing to the earthquake and fire, and consequent disorganization, very little has been accomplished. I recommend that the Committees be continued.

The Secretary—I have no objection to these Committees being continued and no objection to a progress report, but I think the time is ripe to bring the matter of a Gas Engineers' Degree to a favorable conclusion.

Mr. Jones reported that the Advisory Board had performed its usual duties during the past year, but then its work was of such a nature that a detailed report could hardly be expected. They had answered letters giving advice, etc., as had been called for.

The President—The report is accepted Mr. Jones and we hope you will continue to give good advice. The next order of business is the election of applicants for membership. I will ask the Secretary to read the names:

Regular.

Cantrell, R. J., San Francisco, Cal.
Carson, S., San Francisco, Cal.
Davidson, U. N., Oakland, Cal.
Douglas, P. J., San Leandro, Cal.
Hazard, R., San Diego, Cal.
Hockenbeamer, A. F., San Francisco, Cal.
Jones, L. B., San Francisco, Cal.
Kline, W. H., San Francisco, Cal.
Morgan, W. R., San Francisco, Cal.
Ray, D. C., Grass Valley, Cal.
Russell, F. E., Tucson, Ariz.
Van der Naillen, R. L., Oroville, Cal.

Associate.

C. O'D. Blanchfield, San Francisco, Cal.
Godfrey Fritz, Los Angeles, Cal.
McCormick, Henderson Co., San Francisco, Cal.
Vallejo Gas Company, Vallejo, Cal.

On motion of Mr. Jones the applications were accepted and the Secretary was instructed to cast the ballot of the Association in favor of their election.

The President then appointed as the

COMMITTEE TO NOMINATE OFFICERS,

Messrs. H. M. Papst, Portland, Ore.; C. A. Luckenbach, Los Angeles, Cal., and Henry E. Adams, Stockton, Cal., following the announcement with the remark that his successor would appoint the other standing committees, and called for the

REPORT OF THE BOARD OF DIRECTORS.

SANTA CRUZ, CAL., Sept. 16, 1908.

Your Board of Directors, to whom was referred the report of the Secretary and Treasurer, beg to report that, after an examination of the same and the vouchers in connection therewith, they find it in order and all expenses properly accounted for.

We also approve of the election to membership of the several applications on file as listed in said report.

In the matter of the application of the American Gas Institute for amalgamation by this Association, your Directors are of the opinion that, for territorial reasons, it would be detrimental to the interests of the gas companies on the Pacific Coast to surrender peculiar privileges which are enjoyed in the maintenance of the entity of the Pacific Coast Gas Association and, while desirous of aiding and assisting in every way the American Gas Institute, feel impelled to decline the invitation of Dr. Alexander C. Humphreys and request that, through the Secretary, the Association be so advised.

In the matter of delinquent members referred to it, it begs to recommend that all members who are more than 1 year in arrears for dues be suspended, discretion being vested in the Secretary to carry upon the roll such members as are delinquent and from whom it may be possible to make collection at some future time.

In the matter of the invitation of the Yukon-Alaska Exposition, we deem it unwise to hold meeting of the Association other than at central points in California, and in that connection recommend that the session of 1909 be held in the city of San Erancisco.

We recommend the adoption of the following resolution: *Resolved*, That the Pacific Coast Gas Association determines that, in the matter of pressure which should be allowed at inlet of consumers' meters, same should not be restricted in any way as to maximum, but that a minimum pressure only should be specified, years of experience with high pressure distribution in California having demonstrated the fact that much better results for both consumer and company are obtained by excesses of normal pressure, and that no danger to the consumer, either from excess consumption or from possible damage to interior fittings, will result by pressure as high as 15 inches.

R. L. CLARK,
W. F. BOARDMAN.

The President called for the

REPORT OF THE LIBRARIAN.

Pacific Coast Gas Association—Gentlemen: The past year has been the most successful in the history of your Library, more books having been purchased and a greater number of books having been circulated

among your members. It also seems that a general interest has been excited to use the Library for reference as well as educational purposes. The Library now contains 354 volumes, arranged in 5 section book cases of 2 sections each. The cases are located in the office of the San Francisco Gas and Electric Company, 925 Franklin street, and they are protected by an insurance policy of $550.

A carefully indexed catalogue of the books was published during the year at an expense of $61.45. Copies of this catalogue were placed in the hands of every member, and the catalogue is made a part of this report.

Following is a statement of the Library fund:

Cash on hand September 10, 1907	$1,446.44
Received by donation, Mr. W. F. Boardman	100.00
" miscellaneous	.50
	$1,546.94
Expended during the year	851.41
Balance on hand, September 10, 1908	$695.53

Your Librarian would recommend the extension of the Library by the purchase of additional books, and urges the members of the Association to contribute to the Library, either in the form of money or books, of which they may have duplicates.

Respectfully submitted, E. C. JONES, Librarian.

The report was ordered placed on file.

Mr. Lowe—One thing in connection with the report of the Librarian about which I would like to speak is that some vote of thanks should be given to Mr. Boardman for his annual donation of $100. He never fails in his annual donation of $100, and I move that a special vote of thanks be tendered him. [Seconded and adopted, amid applause.]

The Secretary—In soliciting papers for this meeting, Mr. Adams, of Portland, Ore., kindly volunteered to furnish one to be known, as it is listed on the programme, "No. 4.—Purification Problems." We all took it to mean in our office that he was to be the author of the same, but we have since ascertained, on the arrival of Mr. Hall and Mr. Papst from Portland, that the former is the real author of the paper. However, the information was received too late to give Mr. Hall credit on this programme. In the Technical Journals and proceedings Mr. Hall will be known as the author of the paper. It would be well for all the members present to make the correction in their programmes, giving Mr. Hall's name in place of Mr. Adams.

The President here read his

ANNUAL ADDRESS.

[For the text of the Address, see JOURNAL, *ante*, p. 537.]

Mr. Lowe—Gentlemen, it devolves upon me as Junior Past-President in attendance to appoint a Committee on the President's address, and as such, I will name Past-Presidents Britton, Jones and Clements.

READING THE PAPERS.

The President—The first paper to be read will be that on

MODERN METHODS OF HEATING,

by Mr. H. R. Basford.

[For the text of the Basford paper, see JOURNAL, *ante*, p. 664.]

Discussion.

The President—You have listened to a very interesting paper on the use of gas by a new system. My attention was directed to it as a user of gas and not as a man who expected to make anything from the sale of gas. Perhaps someone would like to question Mr. Basford.

The Secretary—To me this paper is a reminiscent subject. No doubt a great many of you recollect the first gas stove that was introduced by a gas company in California. Looking back, 30-odd years ago, when the old Fletcher stove was brought from England, that weighed portions of a ton, and had to be lifted by a derrick into the house, down to the present heater, is a long stride that the gas men have taken. The pioneering of fuel gas was probably the greatest effort of the gas man's life, and we owe it to the electric lighting men that we are alive to-day. I think we were all Rip Van Winkles, asleep on the mountain side, satisfied with the prosperity at the time, and when we began to see our consumption and consumers lessening, we were moved to some action to retrieve our falling fortunes. I want to recall what I said before in these meetings with reference to what was practically the pioneering of the gas stove industry in the United States. An old man named Cushing, in San Francisco, had a little foundry on First street, between Market and Mission streets, by whose doors Mr. Jones, no doubt, passed many-and-many-a-day; but Cushing was one of the genii that need a series of dynamite bombs under them to get them into action. I was one of those dynamite bombs, and succeeded in urging Cushing into the manufacture of gas stoves. Patterned in the beginning something after the English stove, although not so massive in construction, with an oven burner of perforated pipe—most ineffective; but it did its work. It was the means of introducing the commodity to the people. I think the Oakland Gas Light and Heat Company, or the Oakland Gas Light Company, as it was called then, was about the first one on the Coast to introduce gas for fuel purposes, and in 1880, if memory serves me right, we had Cushing make a consignment of stoves. They were about the same as the little No. 7 Eclipse stove, with which you are all familiar. It has 4 top burners and 2 ovens. We were selling gas at $4 per 1,000 at that time, and in order to encourage the use of fuel gas we reduced the price to $3.75 per 1,000. We were the only Company that I know of in the State that made a different rate for fuel, and it has been gradually reduced, until it is now sold for 90 cents per 1,000 for fuel and $1 for illuminating. It seems to me that water heaters have done more towards the use of gas for domestic and commercial purposes than any other heaters of which I am aware. If you will have the patience to look back on the records of the Association I will call your attention to a statement made by me, I think some 8 years ago, when I mentioned an installation that had been made in Oakland for a shirt factory, wherein we sold gas at that time, I think, at $1.75 per 1,000. We guaranteed Mr. Keller, for whom we installed the heater, that we would maintain steam in his boiler at a constant temperature of 80 pounds and provide him sufficient steam to do all the laundry work that he had been doing with coal. He moved to a building where he located on the third floor, and where he could not get permission to maintain a coal fired steam boiler; so, in desperation, he appealed to us. I designed a burner at that time, which afterwards was the foundation of a water heater, made in San Francisco, and which was put in the boiler, and for years maintained steam for Mr. Keller at a cost equivalent to about $3 a ton for coal, under 80 pounds pressure constantly. The installation was never duplicated, but it was really the forerunner of all the uses of gas for boiler heating. The Oakland Company has ever since been in the foreground when it comes to the utilization of gas for purposes of that kind. We have two or three men in our employ in Oakland, who have been there for a great many years, that are genii in that particular line. You can all remember when your fuel sales were possibly 5 or 10 per cent., while to-day they probably run from 50 to 70 per cent. of your total output. The successful water heater has solved one of the great domestic problems. Of course, we can say that a great deal of its success is due to the low rate at which gas is now sold in comparison with former years. Ten years ago an appliance of this character would have been prohibitory. No one could afford to pay the cost of $2.50 per 1,000 as against the price of other solid fuels, but the cheap rate now prevailing makes these appliances possible. In closing, I would say it seems to me the manufacturers of these appliances are more derelict than the gas companies or their managers; that they do no missionary work to help their goods. They expect the gas man to bear the brunt of the introduction of the appliances, and expect him to pay out the money for solicitation for free services, enlarged services or enlarged meters. If the appliance company would put out commercial men, as any other mercantile industry does, making it a point to act jointly with the gas man, they could accomplish a great deal more. If the appliance companies would go into the several fields of California with their own men they could work up a trade that would be more beneficial to them in the long run than to the gas company, and if they would devote some of the money they spend in sending out elaborate circulars in personal active work in the field, they would soon discover the results in the fruitful interior fields.

The President—Would anyone else like to say something on this interesting subject, or ask any questions?

Mr. Britton—Has Mr. Basford made any figures on the basis, for instance, of the rate in San Francisco: Assuming 85 cents for illuminating gas and 75 cents for fuel gas, what would the relative cost be for heating an office building, of five or six stories, with 150 outlets.

Mr. Basford—For radiation it is impracticable to handle such a large building. The cost is prohibitive as against solid fuel. The limit in water heating for radiation is a building of about 40 rooms. I am speaking now practically. The greatest field for us is in small hospitals, small buildings, moderate sized school buildings, etc.

Mr. Keyes—Does Mr. Basford know anything as to the relative cost of heating with hot water system or the hot air system; or whether

there is any great difference in the cost of heating with hot water or hot air.

Mr. Basford—Hot air is undoubtedly cheaper, if properly fired.

The President—I think, gentlemen, from the gas man's point of view, it does not make any difference whether you heat your house with hot air or hot water. Possibly Mr. Fritz can give us some information on this subject.

Mr. Fritz—I have been a contractor all my life and have never been in the gas business, but a few months ago I became interested in a patented hot air furnace. We claim we can heat a house with hot air more economically than with wood or coal, and especially in Los Angeles, where wood and coal are very expensive agents.

Mr. Lowe—What are these prices in Los Angeles?

Mr. Fritz—Very high. About $12 a ton for coal.

Mr. Kuster—I am especially interested in the paper on account of the fire engines spoken of. In Fresno we are attempting to get the water heaters started in the fire engines, for which the cost of oil has been about $20 a month. I am anxious to know whether or not they are a success as compared with oil at that price and rate per month.

Mr. Basford—We had a sad experience in Fresno. After making inquiries, we ascertained that, having been used 5 days, it was discontinued, for the cost was $2.50 per diem. Of course, something was wrong there, and I propose to investigate the matter as soon as possible.

The President—We will now listen to the paper, by Mr. C. A. Luckenbach, on

THE HIGH PRESSURE SYSTEM OF THE LOS ANGELES GAS AND ELECTRIC COMPANY.

[For the text of the Luckenbach paper, see *ante*, p. 576.]

Discussion.

The President—Gentlemen, you have heard a very interesting paper on the subject of high pressure distribution. Perhaps Mr. Jones would favor us with some remarks.

Mr. Jones—I have enjoyed Mr. Luckenbach's excellent paper on high pressure gas distribution in Los Angeles. In our work in various towns, I have noticed an interesting development of high pressure feeding into low pressure districts and it assumes great importance. We found, when we took up the feeding of high pressure gas into low pressure systems, that the service would improve and was most excellent, and there is a temptation to increase the high pressure installation at the plant until the gas flows back to the holders. Wherefore, if we are not careful we find we are compressing nearly all of the gas and that the gasholders are not doing their share of the work. If great care is not used, as under the conditions of which Mr. Luckenbach speaks, of high pressure feeders leading into a district at some distance from the works with a minimum initial pressure of 13 inches, which is the pressure of his 5,000,000 cubic feet holder. The high pressure will feed back into the district until it meets and increases this 13 inches of pressure, thus adding to the cost of the gas, even the small amount of 1¼ cents per 1,000 for pressure, making it a burden on the gas company. We have had to meet this condition of affairs in several of our towns. For instance in a very large city it became necessary to install larger gas fans to increase the initial pressure from the holder, so as to force the high pressure fed gas further out into the district. That establishes what you might call isobaric zones in the district. These isobaric zones should be kept as far as possible away from the distribution holders. To accomplish this result it becomes necessary to take pressures throughout the district from time to time to ascertain if the fans at the gasholders are doing their work, or whether they are being assisted by the compressed gas, otherwise you will be led into an expensive installation, which I consider unnecessary. The establishing of the isobaric zones in Oakland during the last few months has saved us a large amount of money in increased high pressure installation.

The President—Mr. Luckenbach, that has not been our experience in Los Angeles, has it? The pressure coming back?

Mr. Luckenback—Not since the installation of the 5,000,000 feet holder. We previously had some trouble in that way.

Mr. Jones—I simply mentioned this to save money on high pressure installation. You all know I am an advocate of high pressure gas, but I believe in using it with a great deal of discretion.

Mr. Clark—We used a similar system in San Diego, but keep our governors set just a little below the holder pressure.

Mr. Lloyd—Mr. Luckenbach, do you draw directly from your storage holder?

Mr. Luckenbach—Yes.

Mr. Britton—It seem to me in one thing high pressure gas distribution has been of great benefit. In the early days of this Association we had papers from well known men on the Coast relative to the development of naphthaline. I do not suppose that naphthaline can live where high pressure exists. In one of our cities we had a very interesting naphthaline experience during the past few summer months, which we finally overcame by removing the naphthaline through compressing the gas, and we now regard high pressure is an absolute antidote for that trouble.

Mr. Lowe—It may be of interest to know that at Watsonville we are now installing a high pressure compressing system for no other purpose than to remove aqueous vapors. We will subject all of the gas to probably 40 or 50 pounds pressure, which we think will be sufficient for that purpose. We have had much trouble with "trapped" mains and services, and we believe it will be better and cheaper to remove the water by compression than to be continually working on the pipes. The gas having been compressed will be put into the distributing holder to prevent its again saturating itself with water vapor therein; the surface of the water will be completely covered with a good coating of crude oil. In Watsonville there were at one time two gas companies, the troubles of one of which we inherited as described. The works of one was uptown, that of the other was downtown. The gas is now made at the latter plant, where it will be compressed and freed from its water vapor before transmission to the uptown distributing holder. We expect the dry gas will fully absorb the water in the trapped mains and services, after which we hope to be free from these troubles. Next year I will be pleased to report on the success of our experiments.

Mr. Clark—Is it not something new to use oil inside of the holders?

Mr. Lowe—I don't know but that it is for the purpose I have described.

Mr. Jones—The idea of using oil on the water in gasholder tanks is not new. It was tried in the East with coal gas years ago with the idea of preventing freezing the water in the tank.

The Secretary—I think probably we can help our Eastern brethren, particularly in Wisconsin, by getting something on the record with reference to pressures permitted in California. I noticed recently, in a discussion of rules promulgated by the Wisconsin Railway Commissioners governing the gas companies, they have prescribed the minimum and maximum pressures, and as these things follow one and another, some day we may be protesting against any such legislation which would handicap us. I have no doubt that on some parts of our system we have very much in excess of 5 inches maximum pressure.

Mr. Foster—I might say in this connection I experienced a complaint in regard to the increase in my district. The parties accused the gas company of blowing air into the pipes and I had considerable trouble in convincing the people that we were not so doing.

The President—You must not lose sight of the fact that the ordinary consumer is not a gas man.

Mr. Foster—Of course, since it has been explained, we have had no further trouble in that respect; but it took a month or 6 weeks to become accustomed to it.

Mr. Lowe—Mr. Oswald has had considerable experience. What would you consider a good working pressure to the consumer at the outlet of meter?

Mr. Oswald—That would depend altogether on the size of the house pipes. Possibly 2 inches would do in some cases, while in others much more would be required.

Mr. Lowe—Experience taught me that consumers like a good, strong pressure on house pipes. I have delivered much gas at pressures of from 6 to 8 inches and the consumers were delighted with the service. The very high pressure compelled them to watch and regulate their burners, so there was no trouble.

Mr. Pedersen—Referring further to this pressure matter. I think I know why Mr. Oswald asked this question. One of his customers who had been complaining about low and high pressure asserted that he received a much better combustion with the high pressure and more economical combustion.

Mr. Jones—I do not wish to inflict myself on the members of this Association, but one detail of high pressure gas distribution I want to bring out, which has been overlooked by a great many companies. It is the proper inspection of house regulators and individual regulators used at the inlet of the meters from high or medium pressure mains. We buy the regulators, take them for granted and put them in. During the last 6 months I have had charts taken on 24-hour recording gauges placed on the house pipes where regulators are

used, have taken records of the pressure on these premises during 24 hours, and found considerable variation. Where we think that we are giving consumers 4 inches of pressure at all times, occasionally, on account of defects in the governor or our failure to clean them from time to time, or the lighting of a gas appliance or a large gas range, will immediately drop the pressure to perhaps ½ to 1 inch momentarily. On account of the governor not being sufficiently sensitive, it does not operate quick enough. Therefore, I think we should make an inspection of all of the governors on high pressure work at least once in 2 months. And I would suggest the use of recording pressure gauges from point to point to determine how the governors are working.

Mr. Oswald—We have been forced to do just what Mr. Jones has stated. We endeavor to deliver at the outlet of meters 3.8 pressure and test the regulators periodically. We use three different makes of regulators, and find that the regulators with a full opening will retain about 3.6.

The President—Does anyone else want to ask any further questions on this paper? What is our experience about testing regulators, Mr. Luckenbach? Are we doing it regularly?

Mr. Luckenbach—I am not able to say, but they are all thoroughly tested before being put out.

Mr. Lowe—I would like to ask Mr. Oswald, who has in charge nothing but high pressure service, how much trouble he has, month by month, with the 1,100 or 1,200 consumers he supplies?

Mr. Oswald—The only trouble we experience is an occasional blowing of the regulator seals, due to the fact that sometimes a little dirt will accumulate under the seat of the valve and in that way hold it open, which, of course, will cause some trouble.

Mr. Lowe—How many such complaints do you have in the course of a month on an average?

Mr. Oswald—Possibly 5 or 6.

Mr. Jones—The trouble I speak of is the trouble that you have to hunt.

Mr. Lowe—Mr. Jones spoke to me a few days ago on this point, and I think his suggestion, relative to testing pressure at inlet and outlet of regulators, a very good one. We have recently placed an order for two recording pressure gauges for the purpose of making an extensive series of experiments. One of the gauges will, of course, read in pounds, the other in inches of water.

EXPERIENCES.

The President—We will proceed to the "Experiences" submitted by the Editor, Mr. R. P. Valentine.

[For the Experience Recital, see JOURNAL, *ante*, p. 667.]

LAMPBLACK BRIQUETTES.

Mr. Valentine—With Mr. Jones' permission I brought down for inspection some samples of lampblack briquettes. Likely Mr. Jones can tell you more about this process than can be told by me.

Mr. Jones—The briquette shown by Mr. Valentine was made by a special briquetting press which I devised, and which is now in active operation at the Potrero works. It will produce in the neighborhood of 50 tons a day, which total contains something over 20 per cent. of water. This lampblack may be used in bulk for water gas making, but we find it to great advantage to briquette it. With our press, water is pressed out of the lampblack and flows from the mould; that is, it is not imprisoned in the mold. With this press we are able to squeeze out a portion of the water and thoroughly bind the lampblack by the water and the hydrocarbons which it contains. These briquettes are made in a plunger press and break off naturally at about two strokes of the piston. We are getting excellent results and find the lampblack superior to anthracite coal; but it cuts down the capacity of water gas machines. We are not having any difficulty with it, however.

Mr. Adams—How much pressure does it take?

Mr. Jones—Very slight. The press is made on the principle of a sausage machine. The lampblack is fed into a trough, which is kept filled, the 4 plungers, arranged with eccentries on one shaft, operated by a small engine, are constantly dropping into a mould and squeezing the briquettes out at the bottom.

Mr. Keyes—Is it just the pure lampblack or oil?

Mr. Jones—It is the lampblack from the wask-boxes plus the tar from the scrubbers.

Mr. Keyes—Do you use any crude oil?

Mr. Jones—No; we mix no other substance with it. We found also that there was sufficient tar in the lampblack to form a binder for both lampblack and anthracite screenings, but when we used up our anthracite screenings we were compelled to make our briquettes of straight lampblack, and, after considerable trouble, succeeded in doing so. I believe the day has come when, instead of being looked upon as a filthy substance, that lampblack will be so valuable that it will not be used as an ordinary fuel under boilers for making steam.

Mr. Adams—How much moisture is in that sample?

Mr. Jones—That sample is pretty well dried out, as it has been in my office for some time; but I presume that it carries less than 15 per cent. of water.

Mr. Valentine—That is, 15 per cent. moisture when pressed?

Mr. Jones—I should say 15 per cent. moisture is in that brick now.

Mr. Adams—Do you sell it, or use it for gas purposes?

Mr. Jones—We do not sell any lampblack. It is too valuable. Our San Franciso gas is a very remarkable one. We have succeeded in getting a gas of over 700 B.T.U 's, and this gas has a higher specific gravity than oil gas, reaching as high as .511, while oil gas goes below .400. If the specific gravity of oil gas goes below .400, you can make up your mind that the hydrogen is over 50 per cent. of the gas itself. That seems to be a line of demarkation in gas analysis, and by increasing the specific gravity by practically 25 per cent., it is quite an advantage from the consumer's standpoint, as the gas is not quite as flighty and is better for economical reasons. It contains, to be sure, more carbon monoxide, reaching as high as 9½ per cent. The marsh gas is increased to over 30 per cent., reaching in the San Francisco gas as high as 36 or 37, and the hydrogen is reduced at times to below 40 per cent., so that it is really better than coal gas. You will remember that I said a chemist could hardly detect the difference between oil gas made on the Coast and the coal gas made in the East, but oil gas contains a greater percentage of heavy hydrocarbons, as much as 10 or 11 per cent., whereas it varies in coal gas from 3½ to 5½. Our gas is very much richer, but with this mixture of water gas and oil gas there are great advantages which cannot be obtained in any other way with the straight oil gas. Furthermore, it makes a clean-up process of making gas. You have nothing for sale. Everything that you produce from oil is converted into gas.

Mr. Basford—May I ask Mr. Jones what are the B.T.U.'s to-day in San Francisco gas?

Mr. Jones—700 per cubic foot.

The President—The meeting will stand adjourned until to-morrow morning at 10.

(To be Concluded.)

PROCEEDINGS, SEVENTEENTH ANNUAL MEETING, MICHIGAN GAS ASSOCIATION.

HELD IN KALAMAZOO, MICH., SEPTEMBER 23D TO 25TH, 1908.

FIRST DAY—MORNING SESSION.

The meeting was called to order by the President, Mr. D. H. Frazer, who said: Gentlemen, this is the seventeenth annual meeting of the Michigan Gas Association. We will first listen to a few

WORDS OF WELCOME

from the President of the Kalamazoo City Council, Mr. R. R. Brenner.

On the conclusion of Mr. Brenner's hearty welcoming speech, and an appropriate response thereto, the President announced that, if no objection was offered, the roll call and the reading of the minutes of the last meeting would be dispensed with.

The report of the Executive Committee was then considered, and prominent in its paragraphs were the following: Messrs. Irvin Butterworth, F. W. Blowers and B. C. Robinson were named as a Committee on Nomination of Officers; Messrs. J. J. Knight, A. G. Lloyd and J. C. Sloan were appointed a Committee on Next Place of Meeting, and those named as the Scholarship Committee were Messrs. A. H. White, H. W. Douglas, J. S. Blauvelt, V. F. Dewey and W. H. Barthold. On motion the report was accepted and adopted.

As a supplement to his report the Secretary said the Association was asked to raise a little more money for the Michigan Gas Association Scholarship, as some extra work on hand required the purchase of some extra apparatus. Letters were sent out and as a result contributions of $750 were made. Only two subscribers (each of $35) had so far failed to send in the money.

The President—What will you do with this report?

Mr. Lynn—I move that the report be accepted and filed.

Vice-President James T. Lynn then took the Chair and the

PRESIDENT'S ADDRESS

was read by Mr. Henning.

[For the text of the address, see JOURNAL, *ante*, p. 620.]

On motion of Mr. Persons the address was referred to a committee for consideration and report, and the Chairman announced as such committee Messrs. H. W. Douglas, H. P. Olds and J. M. Eaton.

The President resumed the Chair and appointed Messrs. H. W. Douglas and R. Shackelette a committee to prepare suitable resolutions respecting the death of Mr. Sedgwick Dean.

Mr. Knight here made the following announcement regarding the entertainment arranged for the members: Mr. President and Gentlemen—I can't begin to tell you how glad we are to have you here with us. In order that you may have a good time we have prepared a plan of entertainment for you. To-night, at the Burdick House, there will be a banquet at 7:30; to-morrow evening at 7 we are going to attend the Majestic Theater, which is in the building adjoining this one. I want you to bear in mind there are two entertainments for that evening. One beginning at 7:30 and closing at 9; the other commencing at 9 and closing at 10:30. It is important that you should be there on time, 7:30, which is a little earlier than performances of that kind commence. From what I have heard of the entertainment I believe we are going to be highly amused. After the show we return to this hall, where we will treat you to a "Smoker," and then we will close early in order for you to get here. We have on hand much more that I have not announced. On Thursday we are anxious to keep you here, and if you do stay we propose during the afternoon to have you visit the plants of the Kalamazoo Stove Company, the General Gas Light Company, the Humphrey Gas Light Company and the American Gas Light Company. These gentlemen are going to do the best they can to entertain you. If you will stay here over Friday we will take you to Gull Lake, which is the finest inland lake in the world, I understand. It is 18 miles from here. A lunch will be arranged for you, as it is impossible to provide entertainment out there at the hotel at this season. We propose to take a lunch for you and give you a ride on the Lake, and you will enjoy yourselves. We cannot do this unless 50 will signify their intention of staying, and, therefore, we ask you to give your names to the Secretary. If there is anything further you can suggest, we are ready to do that, too.

The President then introduced Mr. W. M. Blinks, of the General Gas Light Company, of Kalamazoo, Mich., who read the following paper entitled,

AS IT LOOKS TO AN ASSOCIATE MEMBER.

A person's viewpoint has much to do in shaping his opinions on subjects under discussion. Many serious misunderstandings arise simply because the same thing looks entirely different from two opposite sides. However, in our Gas Association meetings, it is so customary for matters to be presented in the generally accepted light, that the Chairman has his hands full in bringing out a discussion. It seems to be the wish of our president to "start something," and, relying on my acquaintance with various exits and back alleys, he has insisted that I speak as an outsider, get as contrary as possible, and then duck out when the bricks commence flying. My excuse is that I am not here of my own free will and accord, but under compulsion of those who felt that the bill might not be sufficiently filled. What business has an appliance man to break into a programme of this kind, anyhow, save as a sacrifice and burnt offering? His privileges are carefully curtailed in Gas Associations to leading the applause following a good customer's paper, seeing the officers elected and paying a large proportion of the bills.

Why this associate list, anyway? Are the aims, hopes, fears and chances for pecuniary profit of the man who constructs the plant or builds the appliances much different from those of the man who actually makes the gas? The only Gas Association I know of, excepting the new Commercial, having but one list of members, and that an active one, grew so fast and did so much good practical work for the industry, that it burst its bounds as a State Association and become a factor of such national importance that it was deemed necessary to merge it in order to safeguard other and more exclnsive organizations. So passed the good old Ohio.

There being no real line of demarkation, is anything gained by setting up an artificial one which serves to lessen the enthusiasm and efforts of the most aggressive set of earnest believers in gas that this country possesses? We have yet to hear an appliance man speak of his product as a mere temporary expedient to stay the progress of competition for a year or two longer; yet your inner circle, when questioned about the possibilities of gas holding its own against the new electric competition, came out with signed replies somewhat to that effect.

From your active lists, you yearly elect and keep in high executive places in the national Association, men of whom it can hardly be claimed that their interest in the gas industry is the paramount one of their business lives.

If more manufacturers and their representatives could be interested in active association work, made to feel welcome and at ease on the floor of your council chambers, there would result a material stiffening of the backbone of the gas industry, and a better chance of keeping at the helm men with undivided allegiance. Had this been done earlier, the records of association work would be less cumbered with stories of how gas was piped to this peanut roaster or that popcorn stand, and in place would stand reports of gas sales running into hundreds of thousands of feet, really things of inspiration. We naturally wish to sell our wares, but we don't propose to bother you at the annual gathering which we attend to renew acquaintances, to post up with advances, and to contribute our mites to the general good of the common cause. If we have something new to show, we ask the opportunity to make a suitable display, it is entirely up to the gentlemen of the gas fraternity whether they take time to look or not. We do not think it in line with good association work to be treated as pack peddlers, forced to fight against executive councils as well as supercilious hotel clerks for the privilege of access to a gas tap. This does not apply to the Michigan Association, but it is a common experience for the associate member elsewhere, and this appears to be a good place to get a protest on file. Just what sort of a mental twist makes some gas men, about convention time, appear so mortally ashamed of the instruments by which their product is turned into money, is one of the puzzles of our business. Isn't there still a survival of the idea that 30 years ago caused gas plants to be posted with all the variations of "Keep Out," "No Admittance" signs, and the process of gas making was made a dark and bloody mystery to the populace.

Broaden out, look around, the associate list contains a goodly percentage of recruits from the operating gas ranks who are to-day better prepared for active membership than many to whom it is not denied. An appliance man violating the rules of good taste and fellowship may readily be brought to book for his mistakes by the withdrawal of an order or two. He certainly will always be in the minority and cannot make mischief if he were fool enough to want to. He can help your Associations better when on an equal footing with everyone else.

Relieved from the ever-snapping lash of competition in his own line, that keeps the rest of us jumping whether we feel like it or not, the gas man must exercise exceptional will power to keep his business from letting down at times. The manufacturer successfully battling with the world develops a faith in himself and his products that carries over many an obstacle. The time was when gas companies, serving fairly prosperous communities, could usually pick up business enough to yield dividends on the investment without greatly exerting themselves. Until a few years ago this operated detrimentally to the development of many possibilities in gas selling. Now, competition and the enormous expenditures made on works and distributing systems by the various operating companies who so largely dominate the industry, bring the necessity for tall hustling in marketing the output. It is hard, though, to change habits acquired in the past, and your business has actually been too good to bring out the fighting blood in your veins.

Aggressiveness is something most gas men need in larger measure. From his desire to avoid friction in his dealings with the public, many a gas man has become altogether too humble. As long as gas is sold there will be consumers who kick; plenty of them do it from no feeling that they have been misused, but under the impression that unless it is done they will be taken for easy marks and imposed upon at a future date. Others simply are constitutional grouches, and if you tried to give your gas away, they would probably object to the odor, or because the package didn't come in at the kitchen door instead of under the front lawn. I spent years smoothing these fellows out myself and they did loom rather large on my horizon; but now, looking back, they show only an insignificant fraction out of a total of fine, fair-dealing people we served.

I look with undisguised admiration at many of the traits of our opponents in electric lines. Handicapped with a high priced commodity, they still have kept up such a shouting that many of their customers appear to esteem it a privilege to cash in double the amount for their service, which often isn't much to brag of at that. Let any break-

down occur, and Mr. Central Station Man is out on the street corner telling how much worse it would have been if he hadn't been Johnny-on-the-spot to direct repairs. Should a gas man slip a cog and be caught afterwards as he tiptoes up the back alley, he would lift up his coat so the kicks might be squarely landed. Apologies and deep contrition soon make the public believe that it has been shamefully imposed upon.

Tell the gas companies they are licked, and, while the story is an old one that's been sprung for over a quarter of a century, there will surely be some who begin to look for beefsteak to plaster over their eye and a bandage for their solar plexus. Separate the electricians from all prejudice with which they have been inoculating themselves during years of preparatory work, break the mystic spell that keeps technically trained fellows of unquestioned ability cheerfully wiping dynamos at 50 per month, change the dope with that bunch, and squirt a few needles of gas facts and merits into their systems, and then turn them loose to work their might for us. They would have everything else backed off the boards in no time. Take the tungsten lamp, which put the lighting departments of many gas companies into a state of suspended animation. It is a good thing, a product of scientific investigation that any industry might hail with pardonable pride; but it doesn't spell the last word in competitive lighting.

Our to-be emulated friends of the central station say: "Here is a lamp that saves two-thirds the current. Behold in it your salvation from all future lighting worries." One supply house so far effervesced as to solemnly advertise that "The millions invested in gas properties are now at the mercy of the central station man." Under identical conditions, our ultra-conservative engineers of the gas trade would have gone on to explain that the lamps themselves were very expensive, easily broken, and really brought the cost up to about the same as the carbon lamps. Then regretfully they would advise the lamp makers that somehow their townspeople wouldn't enthuse on the new lamps. Since the opposing forces don't do business this way, we may look for a most energetic campaign with their latest lamp, which must be met with renewed activity in gas lighting.

Inverted single burners have struck the fancy of many on account of their novelty, and in residence lighting have been used in large quantities. No satisfactory proof that they have accomplished much in widening the use of gas has come to my attention. Schemes of window lighting have been given much publicity, but observers in position to follow out the installations tell me that as a rule they do not stay placed long. For general lighting, given burners of a dull metal finish that will not readily show the inevitable effects of heat and combustion products, fixtures especially designed, and skilled friendly attention, strikingly handsome effects may be produced. In residences, public halls, churches and other places where all the burners on the chandeliers are only occasionally required, the inverted burner successively improved, as it surely will be, may be expected to help the gas sales.

On purely commercial work, inverted single burners are subject to all the objections that were rapidly displacing the original mantle lights some 8 years ago, when the gas arc saved the situation. At that time we (for I was then selling gas) did everything that our ingenuity suggested to hold our store lighting. Special piping plans, involving individual pilot lines, controlled at convenient points, were tried. Lamps were trimmed with the wonderful glassware that to-day suddenly magnifies a tungsten bulb from its rated power to anything the imagination suggests or competition demands. Anything, everything, that the second growth experts, in school then, are to-day involving for inverted use, was tried, and beside, some things that are yet unsung. All to little effect. The individual pilots will blow out; where not used, the lighting of a large number of burners becomes a nuisance; breakage of glassware and mantles runs up the expense for the business man, or takes off the profit for the gas man.

Inverted gas arcs offer a more promising prospect. They are of high power, are controlled easily, and will be economical to maintain. The upright arcs have fully demonstrated the commercial value of all these features. The light distribution from an unshaded inverted arc surpasses all other lights in the approach to the ideal curve. The lamp is compact, handsome and different. The word "different" as a climax is intentional, because it appears with many to count the most.

In cities where the gas arc service has not been kept up to standard, the older type of lamps naturally are not easily placed, the faults of maintenance being charged against the design. Competition exists in some places, not on a business basis, but is destructive in its aim, and must be met with new weapons. Here the inverted arcs will probably be first used in quantities. So far all efforts in inverted arc construction have failed to produce a lamp that will operate unflinchingly under the wide range of conditions in pressure and quality of gas that the upright type has proven its ability to take care of. Abroad the inverted burners have met with greater success, because there the gas properties are not called upon to keep pace with constantly expanding, rapidly growing cities that make a plant designed to-day inadequate 10 years hence. With pressure not diverging much over 25 per cent. either way from normal, and gas of uniform composition, a good inverted arc will give a better light distribution and more candles per cubic foot of gas burned, than any other normal pressure lamp. Both here and abroad clusters of inverted mantles have been constructed, apparently with the whole idea of the designer being that any old light would do so the mantles pointed down. Such lamps have been on the market several years without attracting particular attention.

Efficient, high power, scientifically designed inverted arcs are now at your disposal. Every effort is being made to get the range in them that is desirable to meet all conditions. If it cannot be done and the lamps are needed to meet competition, it will be up to the gas men to so refine their manufacturing and distributing methods as to hold quality and pressure more stable. This is being demanded by the new State commissions, and it is likely that regulation of this sort will be more and more required as franchises are renewed or amended. Nine-in-ten of all reasonable complaints registered in the gas office are due to these two things, and good business demands that most expert attention be devoted to keeping them right.

I had hoped to show diagrams giving distribution curves of the inverted arc rays, and others of various electric lamps and clusters of electric blubs now in use. These will be mailed to you later, and will show the electrical lines overlapped in practically all points. The inverted lamp readings are vouched for by the Electrical Testing Laboratories of New York, an authority that doesn't hand out undeserved bouquets to gas devices.

I understand that many electric lamps depend for success on a constant pressure not exceeding 5 volts from normal. In comparison with the 25 per cent. divergence previously said to be permissible with inverted arcs, it will be seen that the restrictions imposed by electrical houses are far more stringent. You compete with people who cheerfully meet such conditions as this. If it becomes necessary to use equal care to take advantage of the latest appliances in gas lighting, it will not be surprising if your stockholders insist upon it.

There are many things to be considered in the adoption of new designs of lamps, either for rental or sales purposes. These are being taken up in detail elsewhere and will not be enlarged upon here more than to state that no hesitation should be felt in replacing gas arc lamps of standard pattern with those of the inverted type when necessary to retain profitable business. Just what the basis of exchange should be will depend on local conditions; the favored one seems to be a somewhat higher rental where it is not preferred to sell outright. The fear of an accumulation of old lamps on the hands of the gas company, I believe, is not justified by past experience with other appliances of merit. There are always places where lamps may be put out, either by selling at a discount, renting at a lower price, or loaning out gratis, provided a certain minimum gas sale results.

It may be interesting to those who feel that new designs in lamps must be brought out periodically in order to keep up interest, to learn that in the city of Chicago 68,000 standard, upright gas arc lamps are to-day in use. January 1, 1908, the number was about 60,000. The increase is remarkable as proving the merchantable quality of good gas arc lighting against dull times and most determined electrical competition with all the improved lamps. With the assumed monthly consumption of 2,500 cubic feet per lamp, this gives a yearly sale of over two billion feet of gas, or more than the entire output of all the gas companies in Michigan, outside of Detroit and Grand Rapids, as reported in the 1908 edition of Brown's Directory of American Gas Companies.

A noticeable thing about another kind of competition is that gasoline lighting systems appear to flourish better in towns where the gas and electric interests are combined. The alert promoters of these outfits seize upon the opportunity to play up all the changes that a monopoly cry can be twisted into. The average small tradesman in his dreams of opulence doubtless dwells on the spoils of conquest he would exact should opportunity offer. At heart he is a grasping monopolist, and it takes no particular skill to persuade him that in his present defenseless condition he is being preyed upon by others who got to his goal first. In the absence of competing public service

companies, the fear of oppression is one that is probably natural and should be ever considered by the united corporation. The public should be given tangible evidence that it, as well as the shareholders, participates in the inseparable economies resulting from such a union.

One of the perplexing problems for a really conscientious management is the adjustment of electric rates following the elimination of competition. The electric company that does not bequeath its successor a choice exhibit of cut rates and unprofitable consumers, as well as the revenue producing trade that caused its purchase, is a rare find. Even the most diplomatic handling of the case will excite some resentment, but the sudden enforcement of rules hitherto a dead letter, or the adoption of new regulations of a restrictive nature, should be avoided as a pestilence at this stage of the proceedings.

A combination company, enjoying the advantages incident to its position, is not justified in withholding from the people an untrammeled choice of the different services it has been given the right to vend in the city. The best and most modern appliances for gas, as well as electricity, should be regularly displayed and installed on as favorable terms as are offered where a combination does not exist It is a fact well known to even the casual observer that the standard of lighting is higher in cities where competing systems vie with each other. I would, on that account, call for active rivalry between the gas and electric departments of all combined companies.

Something over a year ago we succeeded in interesting a gas company, supplying the capital of a large State, in the gas arc proposition. Hitherto all efforts had been ineffectual, because of an underlying identity of interest with the electric company, operated as an entirely different concern. At the outset our representative in charge of the gas arc campaign was closely limited as to territory. Step-by-step he demonstrated that, while the gas sales were being steadily helped, no serious harm had been dealt the electric business. The restrictions were removed gradually, until finally, barring the actual solicitation of profitable electric consumers, he was free to take whatever business offered. Two thousand gas arcs were placed in less than 8 months, and the powers behind the throne, intensely pro-electric at the outset, and favoring that department through it all, had not a word of criticism. The entire standard had been raised and more light was bought and paid for than ever was considered salable in that city.

With active effort, in selling on its merits without discrimination, all its products, and with the best means for turning the energy sold into useful work, a gas and electric combination should have no more gasoline competition than is normally to be looked for. Where isolated lighting systems flourish abundantly, they may be taken as the people's protest against existing conditions, and an immediate search for the source of discontent should begin. In this do not hesitate to call on the associate member, who is constantly traveling about and may have helpful suggestions.

One of your "Gas for Fuel, Electricity for Light" boomers undertook to prove recently that the price of gas had little effect upon the progress of electric lighting. He cited natural gas towns where a rate of 25 cents per 1,000 cubic feet is prevalent, and showed that the bulk of the lighting went to electricity. I would accept this rather as further proof of the necessity for good service, proper and uniform pressure and intelligent supervision of lighting appliances. Without this, all gas, artificial or natural, is practically reduced to a position but little higher than the coal pile. The wonderful per capita sales of English gas companies would have been a fairer basis of comparison in talking about low priced gas, but it would not have met the requirements of the sophistry at issue.

Gas for lighting is being pushed successfully at a $1 rate aginst natural gas at quarter the price in many cities to-day. Pittsburgh is a notable instance; the sales of artificial gas steadily fell off for years following the introduction of natural gas. Two years ago the point was being rapidly approached beyond which the gas works could not be operated without a loss. In this crisis gas arc lamps were taken up vigorously, lamps were installed and maintained free, and, as a result of intelligent work and admirable service, 5,000 lamps were placed the first year. The loss in output was checked and sales started upward. Artificial gas is coming to its own in Pittsburgh once more, and, it being only a question of time when the natural product will be exhausted, I do not need to enlarge in a meeting of gas men on the advantages accruing in preserving intact the organization and plants of the artificial company. In the meantime, a good, profitable lighting business is held in the face of cheap natural gas and all electric aggression.

It is not any inherent weakness in gas itself that retards its progress, when retarded it is; the cause lies in the men behind, who are not as active in their efforts as their classification in their gas associations would indicate.

(To be Continued.)

Items of Interest
FROM VARIOUS LOCALITIES.

ADVICES from San Francisco, Cal., under date of October 25th, are to the effect that final plans for a gas works to be located in Sausalito, Cal., which is to supply that district and the hamlet of Mill Valley, were completed October 21st, at a regular meeting of the executives of the newly formed Marin County Gas Company. The plant will be located at Pine Station, on the main road between the named places. The plant will be constructed to manufacture ½ million cubic feet daily, and it is estimated that the expenditure necessary will be not less than $100,000. The officers of the new company are: President, John M. Gardiner; Secretary, Edgar O. Peixotto; Directors, R. P. Valentine, Robert P. Greer and W. J. Boardman.

WE are indebted to Mr. J. E. Eustis for this matter respecting the 60th annual meeting of the shareholders of the Consumers Gas Company, of Toronto, Ontario, which meeting was held the morning of the 26th ult.: "The 60th annual meeting of the Consumers Gas Company was held according to announcement, and there certainly was excellent reasons for the optimism shown during the proceedings. To begin with. The annual reports showed an increase in profit, over that shown in the corresponding year, of $100,000. Last year the President of the Company attributed an apparent falling off in the profits to the fact that for a year previous a reduction of 5 cents per 1,000 cubic feet in the selling price had been effective, but this year the profit was $556,882 as compared with $456,360 in 1907. The Company will offer the balance of its capital stack now unissued, amounting to 5,000 shares, at auction on January 19 next. As will be seen by the figures below, the paid-up capital of the Company will be 3,500,000, and it is to be presumed that with the new works and extensions the Company will be fully equipped to meet the demands for gas for the time at least. The President, Mr. John L. Blaikie, stated, however, that, as it would be necessary in the future to provide for extensions of mains and other works to meet the increased consumption of gas, the Directors propose to ask the shareholders for power to increase the capital stock of the Company. This question will be taken up at a special meeting to be called at an early date. He referred to the fact that at the end of last year, when the market was in anything but a receptive mood, the Company marketed 9,000 shares of its stock of the par value of $450,000, at an average premium of 80.44 per cent. The market price of the stock was then around 185. He further stated that the output of gas for the year amounted to 2,006,804,000 cubic feet, being an increase of 233,216,000 cubic feet, or 13 per cent. over that of last year. We are glad to say, he said, that the Company is able to supply gas at 75 cents per 1,000 cubic feet, while in many cities near coal mines the price is higher. The efforts of the Directors, however, were continually directed towards furnishing gas to consumers at even a lower price. During the year over 23½ miles of new mains have been laid, making the total mileage 360, and 4,941 new services have been put in. This mileage of mains is the largest laid in any year of the Company's history, and includes large trunk mains in several localities. There is a very large and increasing demand for gas in outlying localities, where street mains have not yet been laid, and to supply this demand considerable additional mileage of pipe will have to be laid before the close of the year. It is expected that the new works will be completed by about December 1 next. The additions to the water gas plant referred to in the last annual report were completed early in the season, enabling the Company to maintain an ample supply of gas to its consumers. Vice-President A. W. Austin, in seconding the adoption of the report, pointed out that this was the diamond jubilee of the Company, and that the prospects were very good for the future of the business. General Manager and Secretary, Mr. W. H. Pearson, stated there had been a great increase in the use of gas engines in the city, and that this made a greater field for the consumption of the Company's product. He told of a recent visit to the new Astoria plant of the Consolidated Gas Company, of New York city, which will be in many ways the largest plant in the world. It had nothing better than had the Consumers Gas Company, of Toronto, and in fact lacked in some of the up-to-date appliances in use here. The gas business, he concluded, is safe—very safe. The election of Directors and officers resulted in no changes. The directorate consists, therefore, of Mr. J. L. Blaikie, President; Mr. A. W. Austin, Vice-President, with Messrs. A. H. Campbell, Jr., Sir William Mortimer Clark, K.C., Wellington Francis, F. L. M. Grasett, James Henderson, John Hoskin, Thomas Long, E. B. Osler and Dr. Andrew Smith.

THE franchises, plant, etc., of the Bennington (Vt.) Gas Company, were sold at auction the 29th ult., at the instance of a court order. The properties were purchased by Mr. I. E. Gibson, President of the Bennington County National Bank, at his bid of $20,000. The bonded indebtedness of the Company amounts to $40,000, and it is capitalized in $175,000. This proceeding was brought about primarily by the failure of Mr. E. K. Dunbar, of Boston, who went into bankruptcy about 3 years ago, and who was the principal owner of the Bennington Company.

THE Trustees of the Consolidated Gas Company, New York, have made the final arrangements for the issuance of stock for the outstanding convertible 6 per cent. debentures according to this excellent schedule: Debentures presented on or before the 10th inst., will receive interest in full to January 1, 1909, less deduction of 1 per cent. for the dividend payable December 15, on stock issued for debentures presented for exchange November 10th. Debentures presented on and after November 11th will receive interest in full to January 1, 1909, without deduction, as stock then issued in exchange will be ex-dividend. This action was determined upon to accommodate holders of these debentures and to prevent congestion of business and consequent delay which might easily otherwise exist. The final day for conversion into stock at par of convertible 6 per cent. debentures by the terms of the debenture is December 31st.

THE field force of the Gas Machinery Company, of Cleveland, O., which is carrying out the plant betterments at the plant of the Beatrice (Kas.) Gas and Power Company, is under the direct supervision of Mr. J. A. McCollum, who have been put to their mettle by Manager R. R. Kyd, of the Gas and Power Company, assert that their end of the task will be completed in more than ample time to assure a gas supply to the residents of South Beatrice. The people of that section have been clamoring for gas for 2 or 3 years, and Mr. Kyd asserts they will have it by Christmas, even though his pipe lines will have another river to cross.

"THE General Assembly, of Ohio, at its last session, passed a bill which is likely to later on create trouble between gas company and gas consumer. The bill provides that Sections 3556 and 3561 of the revised statutes be amended thus:

"SECTION 3556. Meters in use shall be tested on the request of the consumer, in his presence if desired, with a meter prover, and tested and sealed as provided in Section 3561 by an officer or servant of the Company. If the meter be found correct, and it shall be deemed correct if there be no greater variation than 3 per cent., the party requesting the inspection shall pay a fee of 25 cents and the expense of removing the same for the purpose of being tested and the reinspection shall be stamped on the meter. If proved incorrect no fees or expense shall be paid by the consumer, and the Company shall furnish the new meter without any charge to the consumer; and no Gas Company shall have the right to charge rent for meters. The provisions of this section shall apply to all gas companies supplying the public with either natural or artificial gas, and the failure upon the part of any person, firm or corporation so providing either natural or artificial gas to the public to comply with the provisions of this section shall cause said person, firm or corporation to forfeit and pay to the State not less than $25 nor more than $100, to be recovered upon the complaint of any consumer of such gas in the name of the State before any court of competent jurisdiction. The balance of the scheme has to do with the way and manner of testing the meters; but enough has been here quoted to show that much trouble will arise out of the measure. Especially so in respect of the declaration. 'And no Gas Company have the right to charge rent for meters.'—M. R. S."

THE authorities of Petaluma, Cal., are again considering the advisability of engaging that city in the operation of a municipally conducted gas plant. The main mover in the matter appears to be the city attorney, Mr. Wm. E. Early.

ON the 18th inst., Mayor Reyburn, of Philadelphia, will open bids for $3,500,000 of city bonds, the proceeds of the awarding to go to certain specified payments on various accounts. Gas works contractors should take notice that a portion of the funds so raised is to be devoted to the extension of the gas works system owned by the county of Philadelphia at Holmesburg. The expenditure on this account will likely be not less than $100,000.

THE Pintsch Compressed Gas Company has purchased a site near the factory of the Britton Leather Company, Brewer, Me., whereon it proposes to construct a plant for the manufacture of gas for train lighting service in certain New England territory.

AT the annual meeting of the Cambridge (Mass.) Gas Light Company, the following officers were elected: Directors, W. A. Bullard, H. Endicott, S. B. Hildreth, G. A. Sawyer, H. C. Rand, A. C. Whitney and D. G. Tyler; President, W. A. Bullard; Treasurer, A. M. Barnes.

MR. J. H. VAIL is the expert who has been retained by the Clinton (Mass.) authorities to investigate and report on the value of the gas and electric plants of the Clinton Gas Light Company, the authorities having for some time been impressed with the idea that it would be a good thing to operate them on public account.

"E. T. W.," writing from Providence, R. I.., under date of October 31, incloses the following: "Gas men up our way are and have been doing quite well, as will be comprehended by everyone when it is noted that the quarterly receipts of the city from exclusive franchises, for the period ending September 30, 1908, show a total falling off as compared with the like period in 1907, of $1,914.28. The star in the collection, however, is the Providence Gas Company, which shows a good increase for the quarter. In 1907 the payment on royalty account for the quarter ended September 30, was $5,907.81, in 1908 the sum paid was $6,178.28. This speaks for itself. There are 6 other corporations which pay royalty (on gross receipts) to the city, and all of these show comparison losses, varying in amounts from $2,000 to $123—the latter, by the way, is from the returns made by the Narragansett Electric Lighting Company."

THE Crown street offices of the New Haven (Conn.) Gas Company will be ready for occupancy early next month. They will certainly be commodious and satisfactory, and handsome as well.

THERE is every indication that a gas war of real, old time nature has been precipitated by the Atlantic City (N. J.) Gas and Water Company, the proprietors of which have notified the residents that, from the 1st inst., the charge per 1,000 cubic feet will be 50 cents. Louis Kuehnle, President of the Consumers (or opposition) Company, seems much perturbed over this act, although he does not mention the fact that the proceedings before City Councils, etc., of Atlantic City, when some years ago these were importuned to grant the Consumers' operators or founders a franchise, would hardly stand exposure to the light. This Atlantic City affair is deplorable in more than one sense, and we hope that before it is at an end some or many of the particulars of the birth of the Consumers' concern will be brought to light. These might have, in fact would be sure to have, an important bearing on the outcome of this wretched competition. Government by commission, it seems to us, would be of positive beneficial application in this instance, no matter who eventually got the worse of it.

THE Utica (N. Y.) Gas and Electric Company will have one of the handsomest office structures in that city when the work of remodeling the buildings formerly occupied by the County Clerk as headquarters will have been completed.

ADVICES by way of Utica, N. Y., to the *Press* of that city, dated the 31st ult., are to the effect that an equity suit has been filed in the United States Circuit Court in New York by Messrs. Eben H. Gay & Co., of Boston, who recently went into bankruptcy, and Joseph W. Jackson, of Boston, who asked that a joint receiver be appointed for the Hudson River Electric Power Company, Hudson River Power Company, Hudson River Electric Company, Hudson River Power and Transmission Company, Ballston Spa Light and Power Company, Saratoga Gas, Electric Light and Power Company, and the Madison County Gas and Electric Company. These concerns chiefly convey electric currents to the cities of Troy, Albany, Utica, Schenectady and Little Falls, and represent a manufacturing concern capitalized in $15,000,000. The allegation sets up insolvency, mismanagement and mingling of funds.

The Market for Gas Securities.

The market for city gas shares was steady early in the week. Towards the close a fairly good demand came, influenced somewhat, no doubt, by the fact that the 80-cent rate case was before the Supreme Court actively. Briefs were submitted, and the final decision will likely come out in December. The opening for Consolidated to-day (Friday) came in at 145½, and at noon the figures were at 146 to 146¼. The terms of converting the 6 per cent. debentures are given in our current item columns.

The Massachusetts Gas Companies securities are feeling the impetus of better business and more inquiries. The preferred of this listing will be at par before January first. Washington (D. C.) is uneven, but the end in the present movement is not at hand.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.
16 WALL STREET, NEW YORK CITY.
NOVEMBER 9.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated Gas Co.	$73,177,000	100	146	146¼
Central Union Gas Co.—1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	130	160
New Amsterdam Gas Co.—1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	102
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98	104
New York and East River—1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—1st 5's, due 1927, J. & J.	1,250,000	1,000	86	91
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	131	142
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	200,000	500	190	—
Out-of Town Companies.				
Bay State	50,000,000	50	2¼	2¾
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	66
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	104¼
Cincinnati Gas and Electric Co.	29,500,000	100	90	90¼
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	98	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	71	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	—	—	74½	75
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	103	103½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	—	100
Preferred	2,500,000	100	60	90
Bonds	10,000,000	1,000	104	104½
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	57	57½
Preferred	25,000,000	100	87½	88
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—

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Royal E. Burnham, Washington, D. C..... 825

Position Wanted

By successful and competent gas man, with 4 years' experience as superintendent and manager. Thoroughly up to date in all methods of distribution and construction, both high and low pressure systems and water gas manufacture. Has successfully handled 100 men, including jobbers, fitters, appliance men and laborers. Can show results and A-No. 1 references. Address, "XXX,"

1742-4 Care this Journal.

WANTED,

A Position as Superintendent or General Manager

Of a large illuminating or railroad company, or a combination of both. Have had 10 years' experience in the business, and have put several run-down properties on a paying basis. Can furnish the best of references and am willing to go anywhere.

1744-4 Address, "E. A.," care this Journal.

Position Wanted.

Experience of 15 years, 12 as a manager and superintendent of average sized gas properties, enables the undersigned to qualify as competent in construction, repair and operation of either coal or water gas plant. Correspondence is solicited with owners who have an opening for an energetic and capable man. Has been particularly successful in building up and maintaining good feeling between the public and the operating company. Address, "M.,"

1744-2 Care this Journal.

WANTED,

Position as Superintendent or Manager,

By a young married man, with 8 years' practical experience in the manufacture and distribution of both coal and water gas. Address, "J. B.,"

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Superintendent's Position Wanted.

Having just bought a controlling interest in a gas plant, I find an excellent gas superintendent with the plant. As I do not need a gas superintendent, having had many years' experience in this line myself, I should be glad to recommend him to any company needing a superintendent who thoroughly understands the business.

1744-1 Address, "A. G.," care this Journal.

WANTED,

Position as Superintendent of Coal Gas Works,

By a thorough, practical gas man. Best results warranted. Central States preferred.

1744-1 Address, "N. Y.," care this Journal.

Position Wanted.

Practical man of 15 years' experience in the manufacture and distribution of gas, desires position with gas company. Competent to take entire charge. Correspondence solicited.

1744-1 "PRACTICAL," care this Journal.

WANTED,

Reliable Foreman for a Coal Gas Plant

In city of 75,000. Must be thoroughly familiar with handling of regenerative benches and shovel charging. Address, "Box H.,"

1744-2 Care this Journal.

Expert Gas Stove Salesman Wanted

To visit Gas Companies in the Middle West with a complete line of Gas Ranges manufactured by one of the oldest and best known houses in the trade. Applicant must have had previous experience in this line and also a record as a salesman competent to handle large business. Address,

1741-4 "TRADE MARK LINE," care this Journal.

WANTED, A MANAGER,

To take entire charge of a small gas plant. Give age, reference, record to date and salary expected.

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We wish to purchase an improved ammonia concentrator in good condition. Please furnish full particulars with the price f.o.b. shipping point.

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A Water Gas Set, Complete,

Capable of making 8,000,000 feet per month. Been used 4 years. Put out of commission by natural gas. GUTHRIE GAS CO.,

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Four (4) 4 x 2 Cast Iron Purifiers, with dry center seal and all connections.

One (1) 8-Inch Exhauster and Engine.

Hydraulic Main, Bridge Pipe, Standpipe and Mouthpieces for bench of threes.

Hydraulic Main, Bridge Pipe, Standpipe and Mouthpieces for bench of fives.

Hydraulic Main for bench of sixes.

One 2-Pipe Washer.

One 6-Pipe Condenser.

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FOR SALE,

One Pair 8 x 10 x 5 Dry Lute Purifying Boxes.

Steel, with center seals and connections and duplex hoist. CALUMET GAS CO.,

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Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

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THERE IS NOTHING ABOUT THE OPERATION OF A GAS MACHINE QUITE SO IMPORTANT AS THE WAY THE OIL IS PUT INTO THE SET. OUR SPRAY DOES IT IN THE RIGHT WAY AND WE WANT TO SEND YOU OUR CIRCULAR TO PROVE IT.

CHAS. SCHREIBER, 2807 W. 47th St., Chicago.

THE FERY RADIATION PYROMETER

Operates from focussing the heat rays from a hot body on a sensitive Thermo-Couple

INSTANTANEOUS

Can be used as close to the hot body as one foot or as far removed as 100 feet.

CONTINUOUS

AUTOMATIC

As no part of the instrument enters the retort no damage to it can result in use.

ACCURATE

THE FERY In use before a Gas Retort

Taylor Instrument Companies

ROCHESTER, N. Y.

Sole Manufacturers and Distributors for the American Continents.

American Branch of the Cambridge Scientific Instrument Company, Cambridge, England.

BOOKLET P-4001 Describes the Fery Radiation Pyrometer. Sent on request.

View of Rotary Meter House, Croydon (England) Gas Works.

The Croydon Company first installed (1903) a small Rotary to measure air to purifiers. In 1904 a Rotary of 80,000 cubic feet per hour was set to measure water gas make. This latter machine has been in continuous service since it was installed.

In 1906 Mr. J. W. Helps, Engineer and General Manager of the Croydon Company, in view of the satisfactory service given by the above machines, determined to install two additional Rotaries—one of 180,000 cubic feet per hour and another of 25,000 cubic feet per hour. The above illustrations show the exterior of the house erected to accommodate these meters and the interior of the same. The smaller one takes care of the make when the send-out falls below the minimum of the larger machine.

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One-half the cost—One-tenth the space of old style wet meters.

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Main Office and Shops

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EXHAUSTERS, CONDENSERS, SCRUBBERS,
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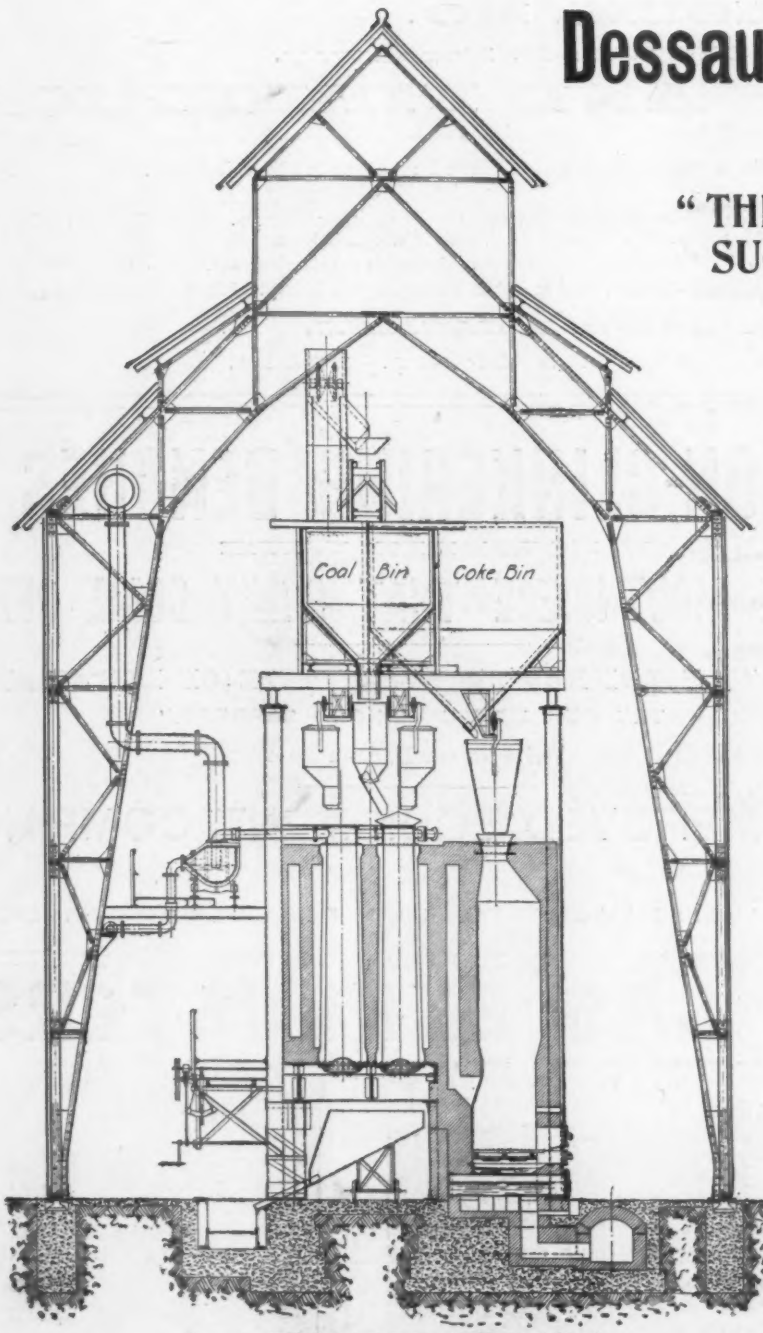
VALVES, CONNECTIONS,
BY PRODUCT MACHINERY,
COMPLETE GAS PLANTS.

PACIFIC COAST AGENTS: Hallidie Machinery Co., Seattle, Wash.

ROUND STEEL PURIFIERS WITH GATE AND DOUBLE SEATED REVERSING VALVE CONNECTIONS.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.



Cross Section of Retort House for Vertical Benches.

Dessau System of Vertical Retorts.

"THE ONLY SYSTEM IN SUCCESSFUL OPERATION."

Nineteen Installations with 126 Benches in operation.

ELEVEN Installations with **96** Benches in course of construction.

Maximum gas produced per man per 24 hours, 360,000 cu. ft.

Ten per cent. increase in yield of gas.

Forty per cent. increase in yield of ammonia.

Best quality of coke.

Least percentage of breeze.

Low fuel consumption.

Tar produced low in carbon.

Extreme low cost of retort house labor.

Minimum expense in wear and tear.

No Naphthaline.

No Cyanogen.

Present Producing Capacity, 25 Million Cu. Ft.

Within **90 days** the above producing capacity has been increased to **31 Million Cubic Feet** by additional orders for **39 benches** with **390 retorts.**

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GAS RETORTS AND FIREBRICK.

Benches.—We erect GAS RETORT BENCHES with Horizontal retorts having closed ends, or Through retorts up to 20 feet in length.

Slopers.—Also, SLOPERS on improved lines for Inclined Retorts.

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Retort Houses and Conveying Machinery.—We also build Retort Houses, Coal and Coke Conveying Machinery. Plans, specifications and estimates cheerfully furnished.

CORRESPONDENCE SOLICITED.

ALL CONTRACTS MADE AS OF ST. LOUIS.

THE IMPROVED EQUIPMENT COMPANY OF NEW YORK — ENGINEERS DESIGNERS BUILDERS

NON-CLINKERING BENCHES

EQUIPPED WITH

"THE MOUTHPIECE THAT DON'T COME OFF."

PROPOSALS FURNISHED ON EVERY TYPE OF INSTALLATION.

TRY OUR LITTLE "3-HOUR SCURFER."

Write for our Bulletin No. 2.

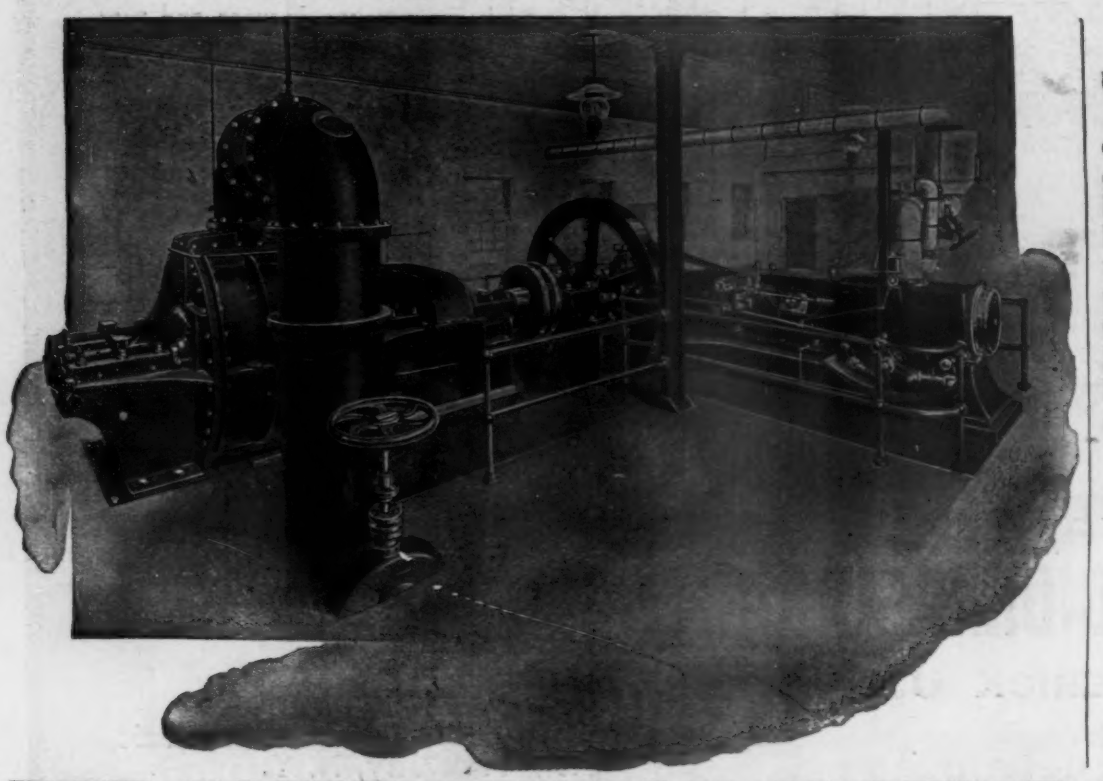
THE IMPROVED EQUIPMENT COMPANY,

MAIN OFFICES: 60 WALL STREET, NEW YORK.

SOLE LICENSEES FOR THE DOHERTY BENCH FUEL ECONOMIZER.

CONNERSVILLE GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS.



THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

—o—

We also manufacture

GAS VALVES,
BY-PASS VALVES,
PRESSURE REGULATORS,
ETC., ETC.

Correspondence Solicited.

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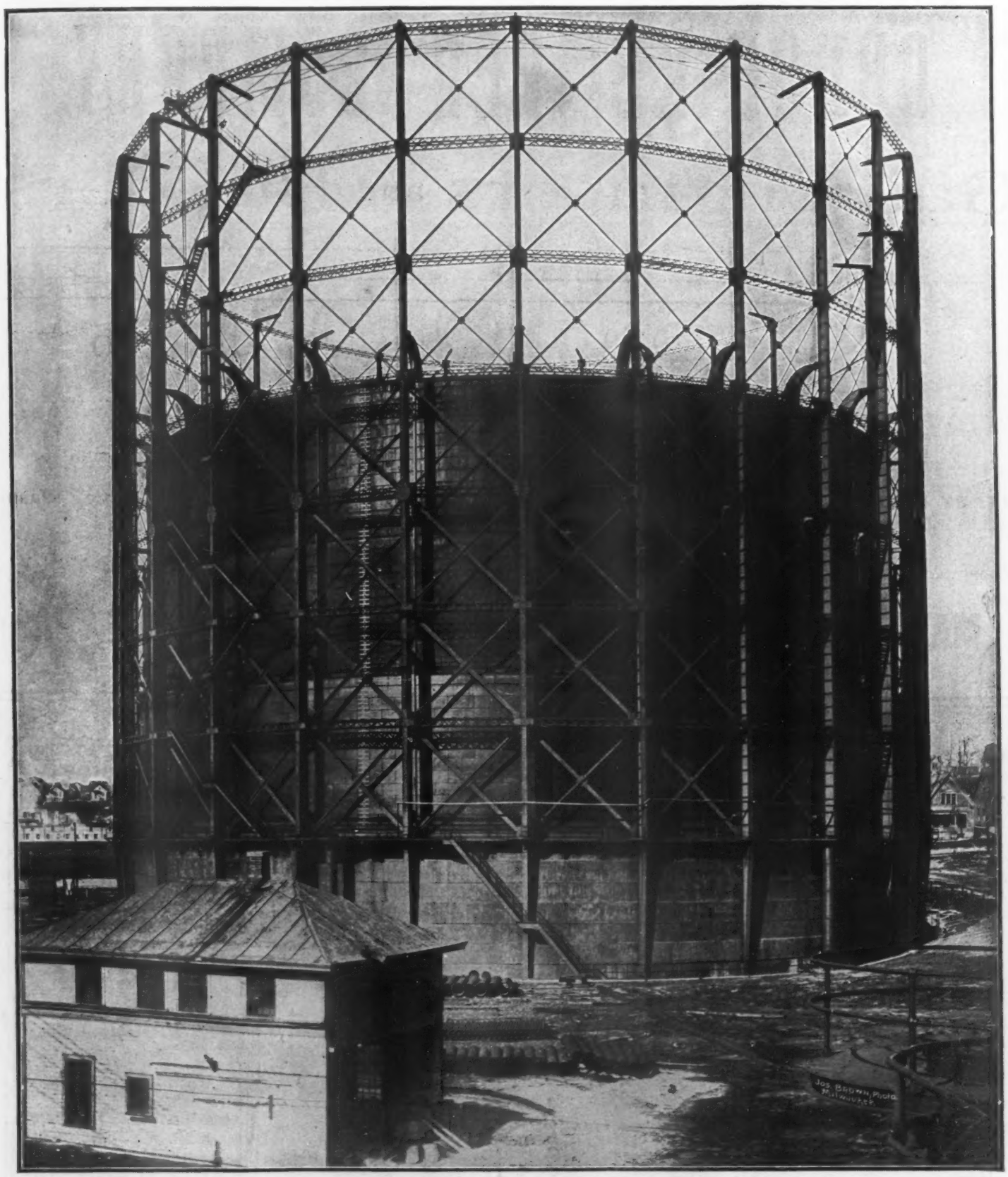

The Largest Steel Tank Gasholder in the World, 225 Feet 9 Inches Diameter, 35 Feet Deep, Five Lifts.

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PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

COMPLETE COAL GAS PLANTS.

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Gas Engineers and Builders.

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PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER

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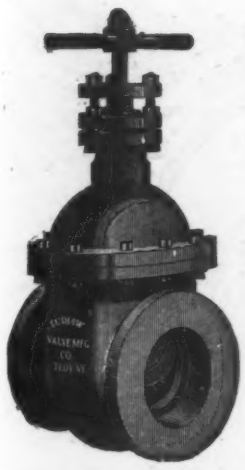
TAR EXTRACTORS

P. & A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N.J.
ESTABLISHED 1865



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Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

Double and Single Gate Valves, ¼" to 72",

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

Send for Catalogue.

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GAS APPARATUS.

Plans and Estimates Furnished for Extension of Gas Plants or Construction of New Works.

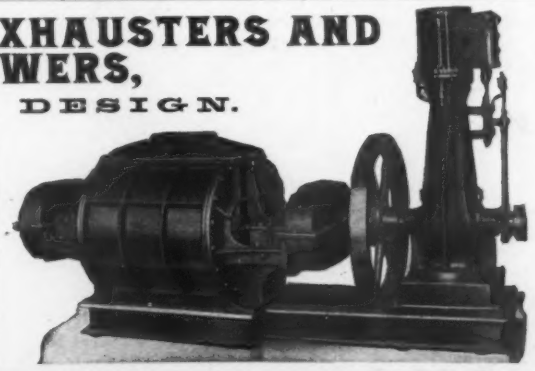
FREDERICK W FLOYD, Engineer,

POSITIVE GAS EXHAUSTERS AND BLOWERS,

LATEST DESIGN.

Most Simple and Efficient Machine on the Market. Let us figure on YOUR requirements.

THE PIQUA BLOWER CO.,
PIQUA, OHIO.



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High Grade Firebrick, Blocks, Tiles,

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AFTER 1400 DAYS

TORN DOWN—NOT FALLEN DOWN.

One of 32 Retorts, 20 feet long, SLOPERS.

RESET AND STILL WORKING.

NOTE THE BRICK SUPPORTS.

HORIZONTALS, INCLINES, SLOPERS OR VERTICALS.

CONVEYORS, COAL POCKETS, CHUTES.

CHARGING AND DRAWING MACHINES WORKED BY HAND.

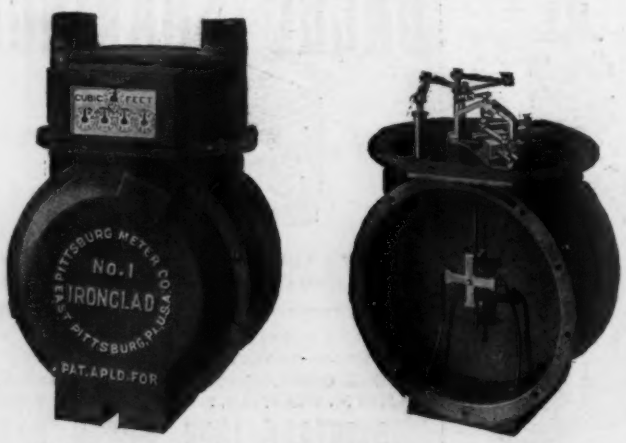
LOCATION OF GAS PLANT GIVEN ON APPLICATION.

GAS WORKS DIVISION

ENGINEER A. S. B. LITTLE

COAL TAR AND AMMONIA,

By GEORGE LUNGE, PH.D. Third and Enlarged Edition.
Price, $15. For Sale by
A. M. CALLENDER & CO., 42 Pine St., New York City.



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Measure with equal accuracy both large and small volumes of either natural or artificial gas.

Valve seats in one piece attached to main case, assuring permanent alignment with slide valves.

Adjusted for accuracy by State Gas Inspector and tested for high pressure. Easily connected to service pipe. All parts interchangeable.

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BEST IN THE WORLD.

Humphrey Instantaneous Bath Water Heaters

Should be used in every home. They make Hot Water **always** ready. Require no attention after installation. Hot water pours forth at any time upon lighting the gas. Close off the gas and all expense ceases. **Absolutely Guaranteed.**

Special Merits.

A burner that won't light back; a **rust proof** enameled shelf; a removable base plate for ready access to burner.

Shall we Send Catalog No. 9 and Discounts?

HUMPHREY CO.,
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No. 19.

No. 20.

Mueller High Pressure Drilling Machines.

Strong in structure, powerful in mechanism and easy in operation. They are especially adapted to drilling high pressure gas mains under pressure, or water mains under pressure.

No. 19 drills holes ⅛ to ⅝ inch in any size pipe under pressure.

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Each Machine is UNCONDITIONALLY GUARANTEED.

Full description and prices upon application.

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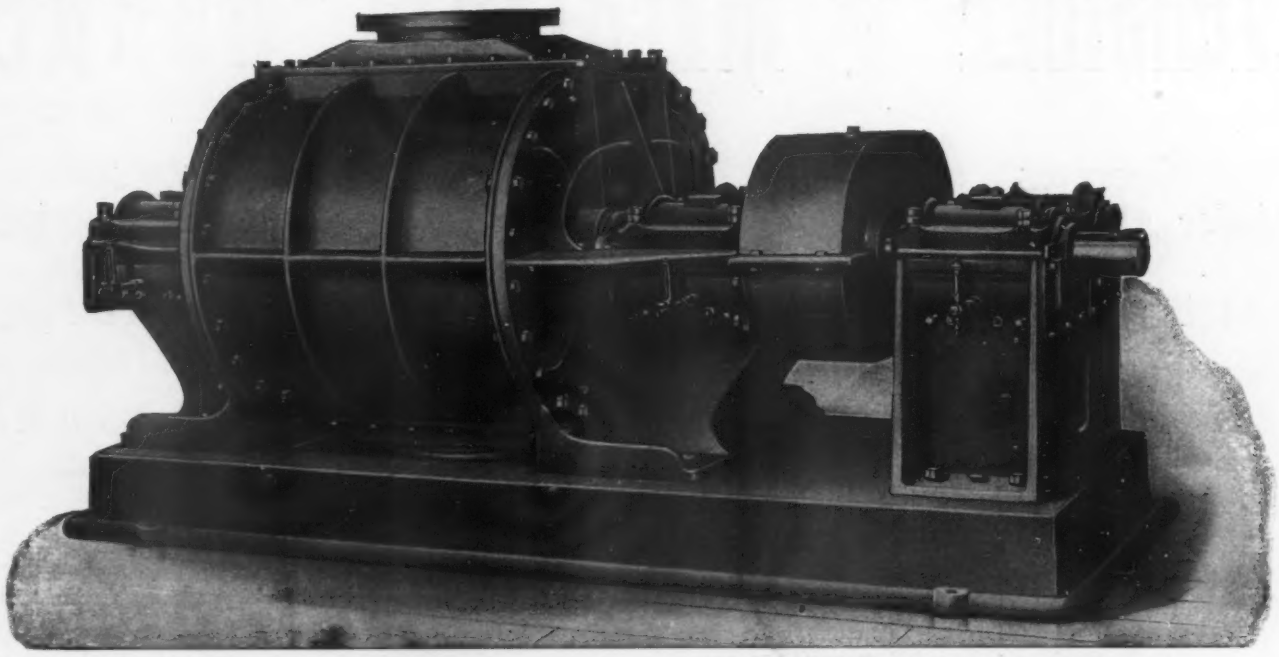
The highest efficiencies obtained. Most perfect devices for adjustment and maintenance of proper alignment. Use our flexible coupling to correct troubles caused by misalignment and engine shaft thrust. Our gas governor is the best. By-pass, gas valves and fittings.



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HUMPHREY INVERTED GAS ARCS.

5-Light Indoor Lamps.
3-Light Indoor Lamps.

Metal or Porcelain Enamel Finishes.

First shipments will be in small lots to enable all Gas Companies to obtain samples for test. * * * * * * *

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THE REVERSIBLE NEW INVERTED BRAY BURNER.

Operates
Under All Pressures
from
10-10ths to 40-10ths.

Guaranteed Efficiency
25-Candle Power
Per Cubic Foot.

Bray's
Reversible Inverted
Can be Used
On Ordinary or Special
Gas Fixtures.

Will not Tarnish
The Fixture.

While the Bray Inverted Burners are new to this country, in England they have been used extensively for the past two years. But, aside from this, the fact that they are manufactured by George Bray & Co. is in itself a guarantee and an assurance of quality beyond question.

Bray Special Burners have been used in this country for more than 40 years. To-day they are recognized as the standard open flame burner, and it will be the ambition of Bray & Company to make these new burners hold relatively the same position among inverted burners.

W. M. CRANE COMPANY, New York,

Sole U. S. and Canadian Agents. Write us for Prices.

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DONALDSON IRON COMPANY. EMAUS, PA.

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

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Manufacturers of BRISTOL'S

Recording Pressure Gauges, Recording Vacuum Gauges,
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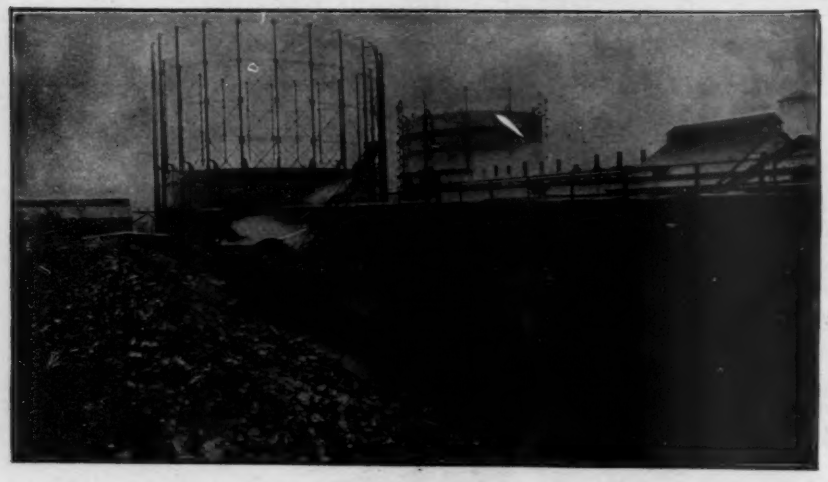
Recording Ammeters, Recording Wattmeters,
AND
THE WM. H. BRISTOL ELECTRIC PYROMETERS
AND
PATENT SMOKED CHART RECORDERS.

The BRISTOL COMPANY,
WATERBURY, CONN.

New York. BRANCH OFFICES. Chicago.



WRITE for our Catalogue "O" just issued. This Catalogue deals entirely with "Brownhoist" Machinery as used at Artificial Gas Plants for handling coal, coke and other materials rapidly and economically.

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Designers and Builders of All
Kinds of Hoisting Machinery.

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CLEVELAND, O.

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For Sale by A. M. CALLENDER & CO., 42 Pine St., New York City.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

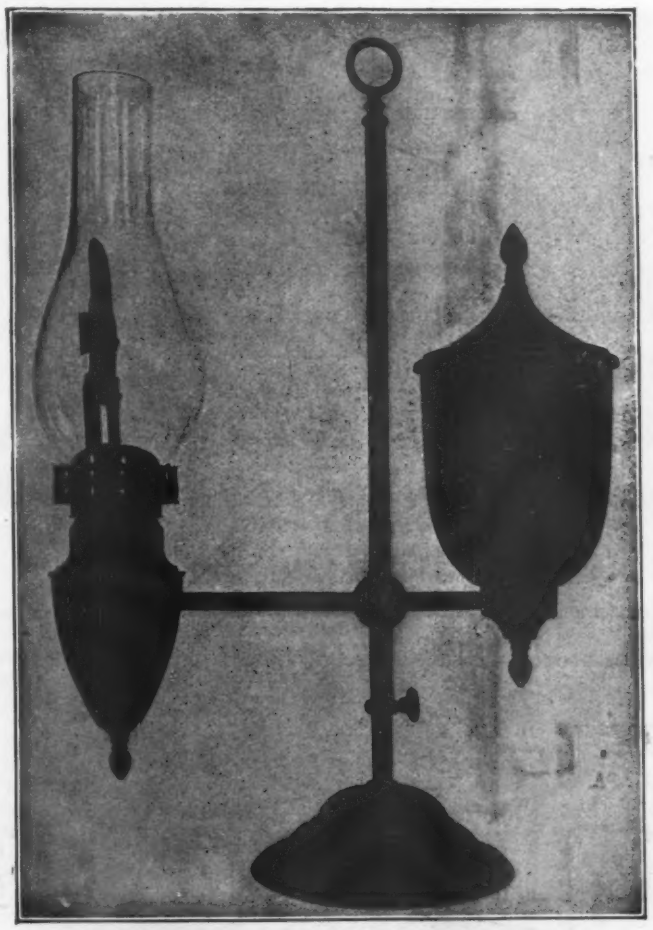
NOVEMBER, 1908.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Sun.	1	10.30 PM FQ	5.30 AM
Mon.	2	11.40	5.30
Tue.	3	12.50AM	5.30
Wed.	4	2.10	5.30
Thu.	5	3.20	5.30
Fri.	6	No L.	No L.
Sat.	7	No L. FM	No L.
Sun.	8	No L.	No L.
Mon.	9	5.20PM	7.00PM
Tue.	10	5.20	7.40
Wed.	11	5.20	8.30
Thu.	12	5.20	9.20
Fri.	13	5.20	10.20
Sat.	14	5.20	11.20
Sun.	15	5.10LQ	12.20AM
Mon.	16	5.10	1.10
Tue.	17	5.10	2.10
Wed.	18	5.10	3.10
Thu.	19	5.10	4.10
Fri.	20	5.10	5.50
Sat.	21	5.10	5.50
Sun.	22	5.10	6.00
Mon.	23	5.10NM	6.00
Tue.	24	5.10	6.00
Wed.	25	5.10	6.00
Thu.	26	5.10	6.00
Fri.	27	5.10	6.00
Sat.	28	8.20	6.00
Sun.	29	9.30	6.00
Mon.	30	10.40FQ	6.00

TOTAL HOURS DURING 1908.

By Table No. 1.

	Hrs.Min.
January	228.30
February	187.30
March	192.00
April	160.10
May	155.10
June	138.00
July	155.50
August	173.40
September	185.20
October	214.00
November	218.10
December	226.40
Total, yr.	2235.00



THE ELLIOTT KEROSENE STANDARD PHOTOMETER LAMP.

***

10-Candle Power.

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This lamp is a perfect substitute for the 10-candle Pentane Lamp hitherto used, and has the following advantages:

1st. It uses Standard Kerosene Oil (Pratt's Astral Oil or equivalent).

2d. It is remarkably steady. Will burn 24 hours continuously with less than 2 per cent. variation.

3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

NOVEMBER, 1908.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A. M.
Sun.	1	4.37	5.17
Mon.	2	4.37	5.17
Tue.	3	4.37	5.17
Wed.	4	4.37	5.17
Thu.	5	4.27	5.27
Fri.	6	4.27	5.27
Sat.	7	4.27	5.27
Sun.	8	4.27	5.27
Mon.	9	4.27	5.27
Tue.	10	4.27	5.27
Wed.	11	4.27	5.27
Thu.	12	4.17	5.32
Fri.	13	4.17	5.32
Sat.	14	4.17	5.32
Sun.	15	4.17	5.32
Mon.	16	4.17	5.32
Tue.	17	4.17	5.32
Wed.	18	4.17	5.32
Thu.	19	4.12	5.42
Fri.	20	4.12	5.42
Sat.	21	4.12	5.42
Sun.	22	4.12	5.42
Mon.	23	4.12	5.42
Tue.	24	4.12	5.42
Wed.	25	4.12	5.42
Thu.	26	4.07	5.52
Fri.	27	4.07	5.52
Sat.	28	4.07	5.52
Sun.	29	4.07	5.52
Mon.	30	4.07	5.52

TOTAL HOURS DURING 1908.

	Hrs.Min.
January	481.50
February	329.15
March	351.50
April	341.50
May	233.05
June	218.10
July	282.55
August	254.55
September	292.25
October	420.45
November	374.30
December	411.05
	3992.35
Deduct on account of 50 min. extinguishing time	30.30
Total, yr.	3962.05

NEW YORK, 318 West 42d Street. BOSTON, 820 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, 218 La Salle Street. SAN FRANCISCO, 512 Oak Street.

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...OF AMERICA....

No. 36.

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By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

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Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

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THE BIGGEST LITTLE LIGHT IN THE WORLD.

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As its effectiveness and economy become better known the Welsbach Junior will supersede, for universal use in the home, the old-style open flame gas burners.

Showing Welsbach Junior Light used in connection with ordinary glass globe.

Gives 50-Candle Power.

Uses Two Feet of Gas per Hour.

Attaches to Any Gas Fixture.

Completely Hidden from View.

Use your own globe--either gas or electric.

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Everett, Mass.
Jenkintown, Pa. (2d contract).
Coney Island, N. Y.
Mexico, Mo.
Jacksonville, Fla.
Syracuse, N. Y. (2d contract).
Atlanta, Ga. (2d contract).
Holyoke, Mass.
Peoria, Ills.
Schenectady, N. Y. (2d contract).
Danbury, Conn.
Galveston, Tex. (2d contract).
Quebec, Canada.
Indianapolis, Ind. (2d contract).
Bessemer, Ala.
Waterbury, Conn. (5th contract).
Sioux Falls, S. D. (3d contract).
Philadelphia, Pa.
New Hartford, Conn.
Poughkeepsie, N.Y. (2d contract).
Nashville, Tenn.
Salisbury, Md.
Norfolk, Va. (4th contract).
Wallingford, Conn.
Richmond, Va. (2d contract).
Oak Bluffs, Mass.
Arlington, Mass.

TOTAL SETS INSTALLED DURING YEAR, ... 43
TOTAL SETS INSTALLED TO DECEMBER 31, 1907, ... 677
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1907, ... 545,865,000 cu. ft.

Tar Extractors for Carburetted Water Gas.
Photometrical Apparatus.
Gas Analysis Apparatus.
Recording Gauges.
Straight Standpipe System for Coal Gas Retorts.
Straight Standpipe Cleaners.
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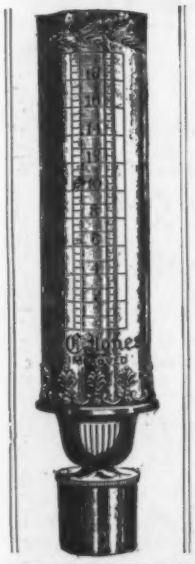

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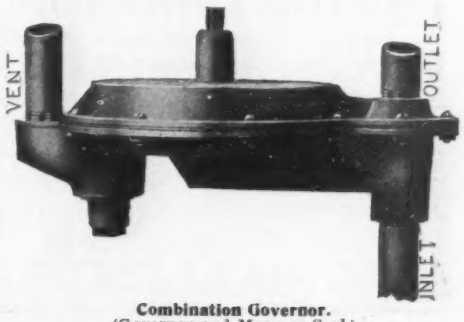

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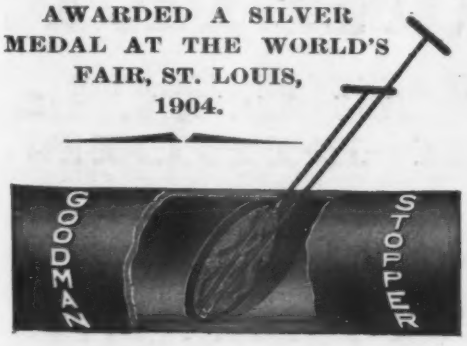

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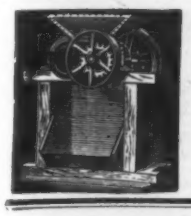

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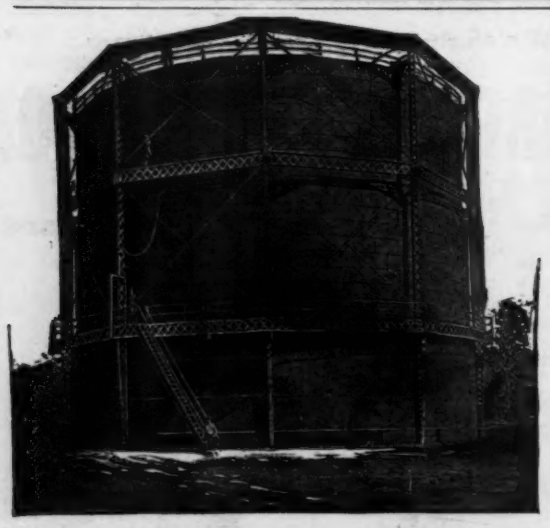

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" 3. Distillation, simple forms of stills, the production of Alcohol from wine.
" 4. Malting.
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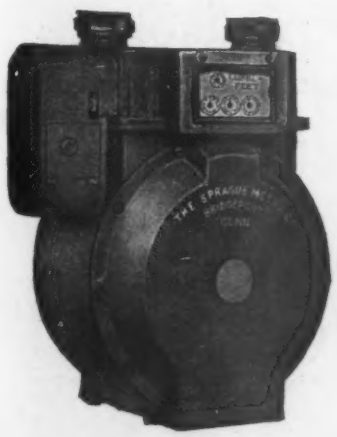

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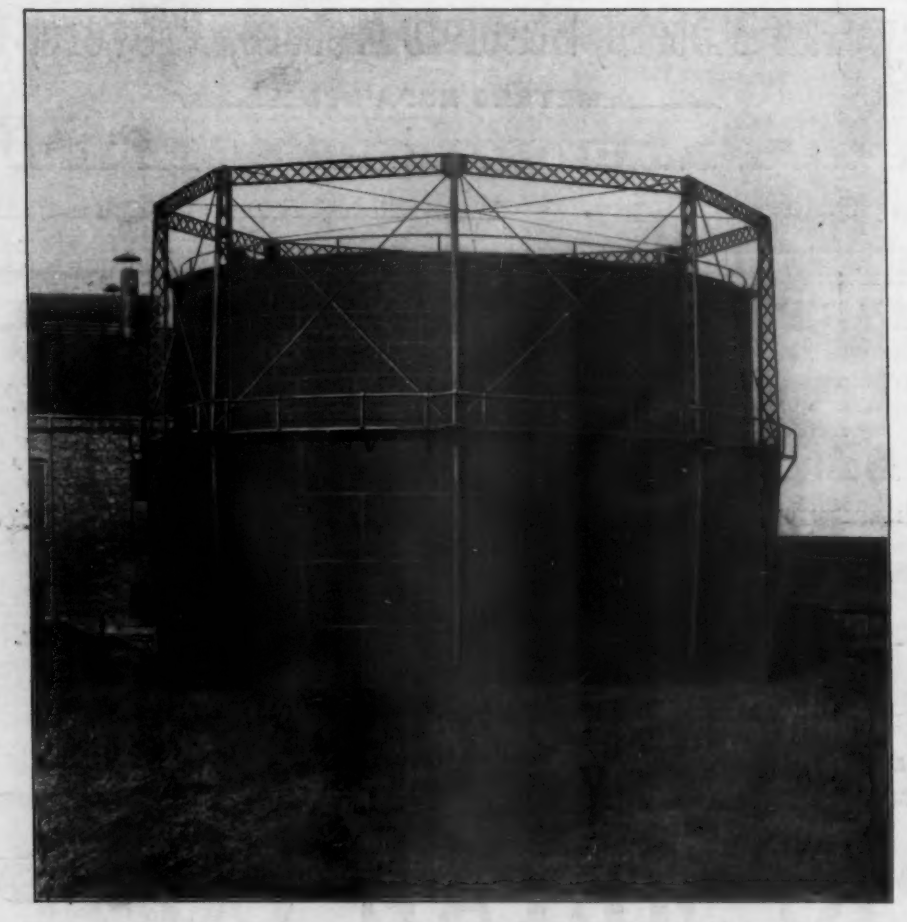

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